ORIGINES KALENDARIÆ HELLENICÆ:

OR,

THE HISTORY

OF

THE PRIMITIVE CALENDAR

AMONG THE GREEKS,

BEFORE AND AFTER THE LEGISLATION OF SOLON.

BY

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ADVERTISEMENT

TO THE READER.

Along with the publication of the Third Part of the Fasti Temporis Catholici, and Origines Kalendariæ, of Mr. Greswell, it may be proper to explain, for the information of those who have not seen the First or the Second Part, that the object proposed by this Work in general is the proof of the following Propositions—

i. That the Measures of Time of our own system of things, both the Natural and the Civil, took their rise in the Heptaëmeron of Scripture, between April 25 and May 2, B. C. 4004.

ii. That the first form of the Civil Year among mankind was everywhere that of the Equable Solar year of 365 nights and days; and this Equable Solar year was everywhere that which is represented in the Tables of the Fasti Catholici from the first.

iii. That every form of the Civil Year, different from this, which is still in existence, or was so formerly, in any part of the world, was derived from it, and being traced historically back to its origin is found to be identical with it.

The importance of these Propositions, if true, to the elucidation of Scriptural and Profane antiquity, is almost selfevident. But as to the proof of their truth, the only method available for that purpose being that of the Inductive Syllogism, the necessity of the case compelled the Author, with so extensive a field of inquiry before him, as one which was destined to embrace, if possible, the history of every calendar, of which anything is known, or can be known, at present, to confine himself to a portion of his subject at a time; and consequently to bring out his Work in Parts, each of which, while contributing its share to the general argument, so far as its proper subject matter is concerned, must notwithstanding appear to be independent of the rest, and an integral work in itself.

The calendars, selected for special consideration in the first Part, were those of the oldest nations—of those nations at least whose historical records, according to their own professions, go farthest back into antiquity, and at first sight appear to be most opposed to those of Scripture—the Egyptians, the Chinese, and the Hindoos; and in particular the Egyptians. Next to these, it appeared to the Author that, writing in this place, he could not direct his attention to any part of his subject, with more propriety, than to the calendars of classical antiquity, those of ancient Italy and ancient Greece. And either of these being competent to supply the materials of a distinct work, the calendars of ancient Italy, for the reasons assigned in the Preliminary Address of the second Part, having been taken first, those of ancient Greece are now offered, as the complement of the history of the calendars of classical antiquity in general, and as the proper subject of the third Part of the Origines Kalendariæ in particular.

Numerically indeed the calendars, which have thus far been considered, are but a fraction of the sum total of calendars, (derived, like them, from the same universal and primitive Type,) which once existed, or do still exist, in each of the four quarters of the globe ; and many more must yet be treated of, in the same circumstantial manner, before the Inductive Syllogism, the premises of which it was proposed to adduce and substantiate, can be considered in any sense as complete. And we are bound to acknowledge with thankfulness, that, for the illustration of the remainder of our subject also, and for the still more complete confirmation of our general assertion, by the evidence of its truth in so many more instances, the Divine Providence has not left us without the materials and means of proof ; not indeed so copious and multifarious as those with which we have hitherto had to do, yet amply sufficient to answer the same purpose in general, and to carry conviction along with them in every instance of their application. We hope therefore, if we are permitted to continue our inquiries into the history of the Primitive Calendar, wheresoever we have the means of following it, that one more Part, not out of proportion to those which have preceded it, may be competent to sum up all that still requires to be said on this subject in particular instances, and yet do enough, and more than enough, for the verification of our General Proposition, of the derivation of Calendars, whether those which have ceased to exist, or those which do still exist—and whether in Europe, or Asia, or Africa, or America—from one uniform Primitive Type, which came into being itself, along with the

Natural measures of time, peculiar to the present system of things, on the first day of the Mosaic Heptaëmeron.

Thus much upon the scope and comprehension of the Work in general, and on the order and connection of its different Parts. It remains, to say a few words on the plan and method of the present Part; which the Author, through the liberal assistance of the Delegates of the Press in Oxford, is now enabled to lay before the University, and the rest of the literary world.

The history of the Primitive Calendar, among the ancient Greeks, brings to light repeated modifications of that Calendar, designed for particular ends and purposes, long before the time of Solon; and modifications which, once introduced, continued ever after in being: but it makes us acquainted with no modification of this kind, which amounted to a change of *style*, or the substitution of a new form of the civil reckoning of time for the old Equable one, before the Legislation of Solon. The Legislation of Solon is consequently an *epoch* in the history of the Greek Calendar, as it is in Greek history in general; and the treatment of this part of our Origines Kalendariæ naturally distributes itself into two principal Divisions—one that of the history of the Primitive Calendar among the ancient Hellenes, from the earliest point of time at which we have it in our power to begin it, down to the Legislation of Solon; and the other, that of the same Calendar, from the Legislation of Solon down to the latest point of time to which it may be necessary to bring it. And though the first of these Divisions, in the natural course of things, it might be supposed would have taken precedence of the second—in reality we have devoted the first three volumes of the ensuing Work to the second; not only because there was no such connection between the two Divisions themselves, as to require each to be taken in its proper order of time, but because we foresaw that the best introduction to the first Division would be the preliminary consideration of the second: and that nothing was more likely to anticipate a variety of objections or difficulties, which might be expected to occur in the Second Part, than the conclusions established in the First.

We have therefore begun our inquiries into the history of the Primitive Calendar, and its successive changes, among the ancient Greeks, with the Attic Correction of Solon; and we have traced it, from the date of this Correction, B. C. 592, to that of the Macedonian, B. C. 468—through six Types of the same kind of Correction in general, (the Octaëteric, or Lunar and Solar Cycle of eight years,) all similarly derived from the Primitive Calendar, and at equal intervals of time. And as each of these Types represented a family of Calendars, agreeing in the abstract or Julian Type of the Correction, and differing, if at all, in particular instances, only in accidental circumstances, it has been our business, in treating of each of these Corrections in its turn, not only to derive the Type itself at the proper time from the Primitive Equable Calendar, but also to follow out, as far as it was possible, the history of every individual Calendar reducible under it, from the form of the Octaëteric Correction, which it first assumed, to that of the Metonic, which in the course of time everywhere superseded the Octaëteric ; and from the Metonic to that of the Julian Correction —in some form or other of which all these Lunar Corrections of the Primitive Equable Calendar, among the Greeks, sooner or later, were absorbed alike. Nor did we consider that we had done with the history of each of these Types, and its subordinate calendars, until we had succeeded, as far as was practicable at this distance of time, in tracing the course of each, through these intermediate changes, from the Solar Calendar, in the form of the Primitive Equable one of that denomination, out of which they all took their rise, to the Solar Calendar again, in the form of the Julian Correction, in which they were all merged at last.

With regard to the second Division—we have begun our inquiries into the history of the Primitive Calendar, among the ancient Greeks, before the Legislation of Solon, with the coming of Erechtheus, or Erichthonius, into Attica, and the institution of the Athenaïc Solemnity, B. C. 1342 ; and we have brought them down to B. C. 602, the epoch of the Sphere of Thales, within ten years only of the Attic Correction of Solon. And in this Division too, so circumscribed in comparison of the other, the predominant Type of the Lunar Corrections discoverable is the Octaëteric. And yet, as the Octaëteric Correction itself presupposes also both the knowledge in theory, and the application in practice, of the Julian principle of the reckoning of time ; it is not surprising that, between these same limits of B. C. 1342, and B. C. 602, as many simply Julian

Corrections of the preexisting Equable solar year should be discoverable, as Octaëteric.

For the particulars however of each of these Divisions, the Reader is necessarily referred to the Work itself. Those questions in early Greek history, relating whether to persons, or to things, or to both, on which ancient testimony and modern belief are most opposed to each other, as was naturally to be expected, come principally, if not exclusively, in the first Division: and it cannot fail to be seen even from a glance at the Table of Contents, prefixed to each Volume, how few of these questions there are, with which the history of the Calendar of the time being is not directly connected; and upon which the Primitive Calendar itself does not interpose a final and decisive judgment, between modern scepticism and ancient belief; condemning the former, and confirming the latter, in every instance alike.

It has been considered advisable to prefix to this Third Part also a General Explanation of the System of Time, represented in the Tables of the Fasti Catholici; and in particular of the true theory, and right administration, of proleptical Julian Annual Time, in terms of Noctidiurnal and Hebdomadal—the most difficult and perplexing question with which a retrospective chronology at the present day has to deal; requiring for its elucidation the nicest and most subtle distinctions—of which chronologers hitherto have had little or no idea. The explanations premised to this Third Part, it is hoped, will be found competent to render this subject intelligible to any one who will give his mind to it; so much so at least that, (if we shall not give offence by the observation,) both the chronologer and the astronomer henceforward must be left without excuse, who should still think of carrying back any scheme of Noctidiurnal, Hebdomadal, and Annual (in the sense of Julian) Time, but that which is exhibited in our Tables from the first*.

* N. B. The Purchasers of this Work should be reminded that the Tables, published along with the First Part, both the General Tables, in one volume 4to, and the Supplementary Tables, in one volume 8vo, (containing also the Introduction to the Tables, both the General and the Supplementary,) were intended to accompany each succeeding Part, and are as indispensable to every succeeding one as to the first.

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PROLEGOMENA.

PROLEGOMENA.

SECTION I.—*On the true physical unit of annual time; and whether the mean Tropical, or the mean Sidereal, year.*

MEAN tropical annual time is the interval, measured by mean solar days and their aliquot parts, between the departure of the earth, or of the mean sun, from one of the cardinal points commonly called Ingresses, and its return to it again. Mean sidereal annual time is the interval, similarly measured, between the departure of the earth, or of the mean sun, from a given point of its orbit, and its return to it again. It is indifferent what this point may be, provided it is always the same; but if it is supposed to be the *locus* of one of the fixed stars also, then mean sidereal annual time may be defined to be the interval, measured in mean solar days and their aliquot parts, between the conjunction of the mean sun with this star in one instance, and its conjunction with it again in the next.

It follows from these distinctions, that, if there is such an integral measure of time as the year, analogous yet contradistinguishable to that of the day, and that of the month, respectively, the true physical unit or integer of that denomination must be the mean sidereal, not the mean tropical, year. The day (including the night), which is the first and simplest of the measures of time, is one complete revolution of the earth, under certain circumstances, about its own centre. The month, which is the next in order and in simplicity, is one complete revolution of the moon, under certain circumstances, about the earth. The year, on the same principle, as the third and the most comprehensive of these measures, yet as analogous to the other two, must be one entire revolution of the earth, under certain assumed circumstances, round the sun; or (as we may also suppose and speak of it) one entire revolution of the sun from a given point in its orbit to the same again: and if the mean tropical year is not a complete revolution of this kind, and the mean sidereal is so, there can be no question that the true unit or integer of time which is properly to be called the year, (the true measure of duration perpetually by the cycle of the year,) must be the mean sidereal year.

It is essential to the nature and idea of an unit of any kind, that it should be always the same, and incapable either of more or of less than it is in itself. The noctidiurnal cycle, in the sense of one revolution of a given meridian from the mean sun to the mean sun again, is one such unit; and the menstrual cycle, in the sense of the mean lunar revolution from conjunction to conjunction, or from opposition to opposition perpetually, is another. On the same principle, and as a third unit or integer of the same kind with the other two in general, the mean annual cycle must be one entire and complete revolution of the mean sun in its proper orbit, from a given point in that orbit (i. e. the ecliptic) to the same again; and if the sidereal year alone is capable of answering to the description of such a cycle, the mean sidereal year alone can be the true physical unit of time which is properly to be called, and properly to be understood by, the year.

It is agreed among astronomers that the mean sidereal year, so defined and understood as one revolution of the mean sun from any given point in the ecliptic to the same again, is something invariable. It depends on elements and conditions which no observation has yet discovered to vary, and no theory has yet assumed to be variable—the length of the axis major of the solar orbit, and the mean motion of the sun. These conditions remaining the same continually, the time of one entire revolution of the sun in its orbit, (the mean sidereal year,) remains the same also: and consequently the true unit of time in the sense of the year (i. e. of one such entire and complete description of the solar orbit,) must be the mean sidereal year.

The succession indeed of changes and phenomena, both on the surface of the earth, and in the heavens, which is meant by the seasons of the natural year, and the cycle of production, dependent upon them, and accompanying them constantly, have always been too important and interesting to the inhabitants of the earth in general, to make it surprising that the popular and common idea of the year at first sight should appear to be inconsistent with the distinction just laid down; or that men should have everywhere agreed to give the name of the year to the cycle of changes on the earth, or in the heavens, ushered in, and discriminated asunder, by the ingresses of the sun into the different quarters of the tropical year: and consequently that, of the preconceived opinions on this subject, the most general as well as the most confirmed and inveterate should be *this*, that the annual measure of time is nothing more or less than the annual succession of the seasons. And yet a moment's reflection will satisfy any one who will think and judge on this subject for himself, that if this annual succession is not absolutely commensurate with one entire revolution of the earth about the sun, if the actual interval of duration, in which it runs through its course, is less than an entire description of the solar orbit, however nearly it may approach to the true idea of that physical unit which is called the year, it cannot be absolutely the same with it. It must differ from it in the same proportion as the natural cycle of the seasons, or cycle of production, commonly called the tropical year, differs from an entire revolution of the earth about the sun, or an entire revolution of the sun in its own orbit, which is meant by the sidereal year.

Section II.—*On the Precession of the Equinoxes; and its effect on the relation of the mean Tropical year to the mean Sidereal perpetually.*

It follows from these distinctions that, if the mean sidereal year, so defined and understood, is an invariable quantity, and yet the mean tropical year, similarly defined and understood, is also an invariable quantity, though both might have had a common origin, and have set out at first from a common epoch, they must have begun to differ from each other as soon as they began to proceed together; and if the mean tropical year was the lesser quantity of the two, at the end of the very first of its proper revolutions, it must have been found already anticipating on the mean sidereal year: i. e. the *second* mean tropical year must have begun before the *first* mean sidereal year was yet at an end. And this anticipation, so begun with the very first revolution of both these kinds of year in conjunction, must have gone on increasing more and more, with every successive revolution of both.

Now with respect to this assumption of a common origin and common epoch of the proper mean tropical and the proper mean sidereal year of the existing system of things—it is not a mere hypothesis. It has been shewn in the two former Parts of the present work [a] that the true mean tropical, and the true mean sidereal, time of the present system of things both took their rise together at the point of the mean vernal equinox (for the proper meridian) B. C. 4004, A. M. 1. Consequently, the first mean tropical year and the first mean sidereal year of the system having thus coincided in their origin, had there never been any difference between these two kinds of year themselves, or any cause in existence from the very moment when they came into being together, calculated *a priori* to affect and modify the relations established at that time between them, if they began together in a state of equality to, and coincidence with, each other, they must have gone on together in a state of equality to and coincidence with each other perpetually.

The question then, which presents itself here, is *this*. If such was the state of the case at the beginning of the present system of things, that the true mean annual tropical time of the system, and the true mean annual sidereal, were then coinciding and beginning together; why have they never coincided again from that time to the present day? why have they only gone on differing more and more from each other, the longer they have gone on together? and while the one is still beginning at the vernal equinox, as it did at first, why is the other now beginning almost at the summer solstice [b]?

In answer to this question, the physical astronomer tells us that every atom, which contributes its share to the material mass of the earth, is subject alike to the universal law by virtue of which every particle of matter in the universe

[a] Fasti Cath. iii. 250 sqq.: 258 sqq.: iv. 146 *n.*: Introduction to the Tables of the Fasti Cath. 241. 260. 261 sqq.: Prolegom. to the Orig. Kal. Ital. cxii.

[b] Fasti Cathol. iii. 261–265. Introduction, 242. 250.

attracts, and is attracted by, every other. He tells us also that the figure of our planet is not that of a globe or sphere, but of a spheroid, i. e. a globular body, flattened at each of its poles and bulging out at the equator. And he gives us an idea of the extent of this compression at one of these parts of the surface of the earth, and in comparison of the other, by giving us to understand that the polar diameter of the earth is 26 or 27 miles less than the equatorial[c].

It follows from this fact that as there is a belt of matter, 13 miles and upwards in depth all round the earth at the equator, there is an accumulation of matter, exposed to the constant attraction of the sun, the moon, and the planets, at the equator, (and at no part of the surface of the earth besides,) the effect of which is an annual phenomenon, of stated occurrence, to which the physical astronomer gives the name of ***Precession,*** in the sense of ***Anticipation.***

Precession itself is a term of which chronology also makes use, and in the same sense of anticipation. Mean tropical annual time is a smaller quantity than mean Julian; and both being expressed in terms of mean solar time alike, and compared together, the difference between them is called by chronologers the *Precession* of the former on the latter, but simply in the sense of the *Anticipation* of the mean tropical year of any assumed length, on the mean Julian. And in our system of time, and according to the standard of the mean tropical year assumed in our Fasti, the rate of this precession annually is 11 m. 9·6 sec. of mean solar time, by which the Julian date of the mean vernal equinox according to our Tables, in one year, falls back or anticipates on that of the year before it perpetually.

Precession in the astronomical sense of the word is a very different thing from this; viz. an actual retrograde movement of the plane of the equator on the plane of the ecliptic, produced by the causes which have just been pointed out: the accumulation of matter at the equator, and the stronger attraction of that part of the earth's surface by the sun, the moon, and the planets, combined with the rotatory motion of the earth itself. The equinoctial point lies in the intersection

[c] Herschel, Outlines of Astronomy, 220. Ed. 1849.

(or node) of the equator and the ecliptic; and the equinox takes place every year, and for every meridian, just when the centre of the earth is on that point. If the plane of the equator is drawn back every year to a certain extent on the plane of the ecliptic, this point of intersection is drawn back also to the same extent; and this point being drawn back every year to such and such an extent, in the contrary direction to that of the motion of the earth in its orbit, the earth comes to that point, and the equinox takes place, so much the sooner, every year.

This is the phenomenon to which the physical astronomer gives the name of the *Precession,* and commonly that of the *Precession of the equinoxes*—the anticipation of the equinoxes year by year, in the sense of the arrival of the earth or the sun at the intersection of the plane of the equator with that of the ecliptic a certain time every year earlier than the year before; the proximate cause of which is the retrogradation of the plane of the equator on the plane of the ecliptic to a certain extent every year, *in antecedentia*, or contrary to the order of the signs—the ultimate is the rotatory motion of the earth itself, and the much stronger attraction by the heavenly bodies, (which, in proportion to their magnitude and to their distance from the earth, are capable of attracting it at all,) of the parts about the equator, than any where else on the surface of the earth [d].

Now it is almost self-evident that, if there is, and always has been, such a thing as Precession, in this sense, it is Precession, and Precession only, which always has made, and still makes, the difference between the mean tropical, and the mean sidereal year. Were there no such thing as the Precession, there would be no difference between the mean tropical and the mean sidereal year. The intersection of the plane of the equator with that of the ecliptic would be confined to one and the same point of the solar orbit perpetually; and the returns of the mean sun to that point, one year after another, while determining the mean tropical year would define the mean sidereal also. And even, according to the actual constitution and course of things at present,

[d] Herschel, Outlines, &c. 312. 642.

the mean tropical year is the mean sidereal *minus* the Precession, and the mean sidereal is the mean tropical *plus* the Precession. And were there only reason to suppose the actual figure of the earth, to which this annual anticipation of tropical on sidereal time is ultimately due, was never at any time, (or never at least since the beginning of the existing system of things, which bears date from the Mosaic creation,) different from what it is at present, it would be a necessary inference from that fact that this particular consequence of such a configuration must have had place from the first, and even though the proper mean tropical time of the system and the proper mean sidereal might have strictly begun together, they could not have gone on together for a single year without exhibiting the same kind and degree of difference *inter se* at the end of that year, as they do at the end of a given year at present.

SECTION III.—*On the explanation of the recession of mean annual time, in the sense of Tropical, in mean noctidiurnal, two terms for every Julian Period of the Fasti Catholici, down to A. D. 225 ; derivable from the phenomenon of the Precession.*

Now, as physical astronomy can bring to light no matter of fact, no affection of necessary and regular occurrence, the subject of which is any of the measures of time proper and peculiar to the existing system of things, (and in particular so important a measure as that of the proper annual time of the system,) which a just and exact chronology will not find to be reflected in those measures themselves, and in their relations *inter se ;* these *three facts*, First, that the true mean annual time of the existing system of things is its mean sidereal, not its mean tropical—Secondly, that the mean tropical time of the system and the mean sidereal began together at the proper epoch of the system itself, the mean vernal equinox for the proper meridian, A. M. 1, B. C. 4004—Thirdly, that the mean tropical time of the system, beginning and proceeding in conjunction with the mean sidereal from the first, was subject to the law of Precession in the same way, and to the same extent, even then, as at present—these *three* facts, we say, are very important to a further question, which directly concerns the principles and administration of the system of time, delineated and exhibited in our Fasti Catholici, from first to last.

The first and most obvious inference from the operation of this law of Precession, supposed to have begun as soon as the present system of things came into existence, is *this*: that the recession of the mean tropical time of the system on the mean sidereal, under such circumstances, would be to all intents and purposes the recession of the mean tropical time of the system, to the extent of the precession, *on itself*. The recession of the first mean tropical year of the system on the first mean sidereal one, under the circumstances of the origination of both which we are supposing, would be the recession of the first mean vernal equinox on itself; and the arc of precession, (whatsoever it might be in this first instance, if it only continued to be the same ever after,) which measured the recession of the first mean tropical year on the first mean sidereal, and that of every subsequent tropical year on every subsequent sidereal one, would measure the recession also of the second mean vernal equinox on the first, and that of every subsequent mean vernal equinox on every preceding one, perpetually *.

Under the same circumstances, it must be equally evident, that if the mean tropical and the mean sidereal year of the system coincided at first, and set out together, the standard of reference of the former from the beginning of things must have been the latter. The mean sidereal time of the system must have been its true mean annual time from the first; and its mean tropical time, only so far as it coincided with and corresponded to its mean sidereal.

Now this is all which is wanted, to explain and account for a very remarkable phenomenon, exemplified in the decursus and administration of our Tables; viz. that of the descent of the natural annual time of our system (and if of the natural, of that of the Julian also,) two terms in the order

* The epoch of a given tropical year, (the intersection of the plane of the equator and the plane of the ecliptic for that year,) is the epoch of a sidereal year in comparison of that of the next tropical year; and if both mean tropical and mean sidereal time began together, the recession of mean tropical time on mean sidereal ever after was to all intents and purposes the recession of mean tropical time on itself.

of the noctidiurnal cycle, two feriæ in that of the hebdomadal, from Period to Period. No explanation of this phenomenon has yet been proposed, or none perhaps which may have been in all respects satisfactory[e]. The preceding account however of the true annual time of the existing system of things, and of the true relation of its mean tropical to its mean sidereal perpetually, enables us to supply this desideratum, and to submit to the reader an explanation as clear and unexceptionable in the principle, as it is certain and undeniable in the application.

The mean tropical and the mean sidereal time of the present system of things having begun together at the point of the first mean vernal equinox, it was a necessary consequence of that state of the case, as we have already observed, that the recession of the mean tropical year on the mean sidereal, from that time forward, would be a recession on itself. This recession the physical astronomer called the Precession; and the rate of this Precession annually being supposed something invariable in itself, yet directly deducible from the relation of the mean tropical annual time of our own Tables to the mean sidereal—in angular motion it is the magnitude of the arc by which the equinoctial point, (the intersection of the plane of the equator and the plane of the ecliptic,) with the mean motion of our Tables recedes in the plane of the ecliptic every year, i. e. 50″·069,541; and in time, it is the difference of the mean tropical year and of the mean sidereal year of our own standard respectively, 20 m. 19·167,455 s.—the interval in mean solar time which would be taken up in describing the arc of 50″·069,541 with the mean motion of our Tables[f].

And this being assumed as the rate of the Precession, both in mean angular motion and in mean solar time, for one year, in 70 years it must be seventy times as much. In angular motion it must be 70 times the arc of 50″·069,541, i.e. 58′. 24″·867,872[g]; only 43″·462,038 less than 59′·8″·329,91[h], the measure of the arc described by the sun with the mean motion of our Tables in one day, (one cycle of 24 hours

[e] Cf. however, Origines Kal. Italicæ, Prolegomena, xxix–lxxx.

[f] Introduction, p. 242.

[g] Ibid. pag. x. Table iii.

[h] Ibid. pag. xiv. Table vii. Pt. i.

of mean solar time,) perpetually. In mean solar time it must be 70 times this quantity of 20 m. 19·167,455 s., i. e. 23 h. 42 m. 21·721,836 s. of mean solar time[1], only 17 m. 38·278,164 s. less than one entire cycle of 24 hours of mean solar time. And in twice 70, or 140 years, it must amount in like manner in mean angular motion to 1°. 56′. 49″·736, only 1′. 26″·924 less than the arc described by the sun, with the mean motion of our Tables, in two days; and in mean solar time to 1 d. 23 h. 24 m. 43·444 s. of mean solar time, only 35 m. 16·556 s. less than two mean noctidiurnal cycles, 48 hours of mean solar time.

It is manifest that, on this principle, the recession of the mean tropical year on the mean sidereal of the existing system of things, (in other words, the recession of the mean tropical annual time of the present system, from the beginning, on itself,) in every 140 years might, without any material error, be assumed at two days, or 48 hours of mean solar time exactly. And if all our Julian Periods consisted of 140 years, it might be assumed at two days for each of these Periods. And though our Periods consist *de facto* of 112 years, and 140, alternately, yet even in the Period of 112 years, the amount of the recession, in mean angular motion, could not be less than an arc of 1°. 33′. 27″·788, nor in mean solar time less than 1 d. 13 h. 55 m. 46·755 sec., only 10 h. 4 m. 13·245 sec. less than 48 hours of mean solar time. Cyclically reckoned therefore, the rate of the recession from Period to Period might be assumed at two days for the Period of 112 years, with almost as much propriety as for that of 140.

The true explanation then of the phenomenon, into the reason or cause of which we are inquiring, is an unquestionable matter of fact; viz. that the mean tropical time of the present system of things has receded on the mean sidereal, or (what comes to the same thing under the circumstances of the case) the first mean vernal equinox has receded on itself at the rate of two days and nights, strictly reckoned, every 140 years; cyclically reckoned, every 112 and every 140 alternately. If therefore at the beginning of the first of our Periods the mean tropical time of the system set out on

[1] Introduction, pag. lxxxii. Tab. xxxv.

the *feria prima* at midnight, at the beginning of the second it ought to be found setting out on the *feria sexta* at midnight, and at the beginning of the third on the *feria quarta* at midnight; and so on, two terms lower in the order of the noctidiurnal cycle, two feriæ lower in the order of the hebdomadal, from Period to Period perpetually. The administration of our Tables consequently, in being conformable to this rule, is simply agreeable to the matter of fact, as it held good in the decursus of the true Annual, along with the true Noctidiurnal and Hebdomadal, time of the present system of things, as soon as they began to proceed in conjunction, and as it was intended to hold good, *mutatis mutandis*, ever after. If there are other difficulties, connected with the same administration, they are more seeming than real; and such as they are, they either have been already explained in the Preliminary Address before referred to, or will be, we trust, in what we have still to say on the present occasion *.

* The phenomenon of the Precession is calculated to suggest some curious and interesting reflections; to which we will take the liberty of briefly adverting.

First, it raises the question, whether that peculiar constitution of the earth, which the physical astronomer assigns as the ultimate cause of this phenomenon, is as old as the earth itself, or not? i. e. whether the form of the earth was ever that of a perfect sphere, or always such as it is at present, a sphere flattened at the poles, and protruding at the equator? A conjectural answer only can be returned to this question; and when we offer *our* conjectures in reply to such questions as these, it behoves us to speak with diffidence, and to distrust our own judgments. But if we may express an opinion even on such a point, we should consider it most probable that, such as the figure of the earth is at present, such it always was; and if the affection of the Precession was an inseparable accident of such a configuration, we should be of opinion, that there never was a time when the motion of the earth round the sun was not liable to this affection of the Precession.

The accumulation of matter at the equator is generally explained as the effect of the centrifugal force, which accompanies the rotation of a material body round its own centre; and it is sometimes appealed to as a sensible proof of the rotatory motion of the earth itself. And were we obliged to suppose the accumulation in question the effect of natural causes, and produced in time, perhaps it would not be possible to account for it in any other way. It is to be considered however that for any thing discoverable at present, this accumulation of matter at the equator does not go on increasing, and yet the motion of circumrotation is constantly going on at the same rate, and the centrifugal tendency which must be presumed to accompany such a motion, is constantly acting on the parts of the earth, both within and without it, at the same rate too.

Or though this tendency on the one hand, and the counteracting forces on the other, may now be considered so nicely balanced, that every thing within and without the earth, so far as these are concerned, is in equilibrium and at rest, still we may venture to conjecture that this peculiar configuration of the earth, (that of an oblate sphere, compressed at both its poles, and standing out at its surface midway between them,) was one of its original characters, stamped upon it by its Creator, before he gave it the impulse of rotation about itself, or the impulse of projection about the sun—for this very end and purpose, that there might be such an affection of the motion of the earth in its own orbit, as the Precession, from the first. For the effect of its actual configuration and actual motion being the recession of the plane of the equator on the plane of the ecliptic to the extent of the arc of Precession every year, the practical consequence of that recession is that the Vernal Ingress, the beginning of every fresh natural or tropical year, is not and cannot be confined to any one point of the ecliptic. Every point in the ecliptic at the distance of the arc of Precession at least, one from another, becomes the epoch of that Ingress in its turn. And for ought which *we* know to the contrary, *that* might have been designed from the first, and there may have been reasons, not revealed to us as yet, why it should be so.

And yet, even without the light of revelation, we may ourselves perceive, in an original constitution of this kind, destined to affect the relation of mean tropical to mean sidereal time perpetually, an analogy to other appointments, equally original, yet equally positive, from the first, affecting the mutual relations of the other kinds of time from the first, which enter into the present system of things. Natural annual time recedes perpetually on Julian; and equable annual recedes perpetually on both. It is only agreeable to this general law, that mean tropical time should recede on mean sidereal; and that the period of the ἀποκατάστασις of these too, from a given point on the plane of the ecliptic to the same again, should be an actual annus magnus of the system (25,885 of its mean tropical years, 25,884 of its mean sidereal,) as much as many others which appear to have been combined in it, and to have been provided for, in its arrangements, from the first. (See the Fasti Cath. iv. 146, 147, Appendix, 553 *sq.* and the Introduction to the Tables of the Fasti, p. 242.)

Again, though the actual rate of the Precession at a given time, as the astronomers tell us, is a variable quantity, and supposing it known from observation at a particular epoch, (for instance, the equinox of A.D. 1750,) to find it for any other epoch, before or after this, they prescribe a particular correction, $\pm t \times k$, (the number of years *after* or *before* this epoch, multiplied by a certain coefficient,) to be added to, or subtracted from, this standard of the epoch—it seems only reasonable to suppose that if there is an absolute standard of the mean motion of the sun, (in other words, an absolute standard of the mean tropical year, and an absolute standard of the mean sidereal,) there must be an absolute standard of the Precession, an invariable measure of its kind, as much opposed to excess at one time as to defect at another. And if there is, we submit it to the judgment of astronomical men, whether this absolute standard may not be that of our own Tables, 50″·069,541 or 50″·07: particularly as, according to Mr. Ideler, *this* is the mean or average of the determinations of the same kind, to which many eminent modern astronomers, Delambre, Piazzi, Hornsby, Zach, have been led respectively; none of them exactly the same with the rest, yet all differing but slightly from one another, and still less from the standard of our Tables. See Fasti Cath. iii. 274 *n*.

Again, it is usual with astronomers also to denote the mean equinoctial point, in terms of the mean longitude, by 0° 0′ 0″; and to speak of the sun as if, from the point of the mean vernal equinox to the point of the same again, it described an entire circumference of the sphere. But after what has been explained *supra*, it must be evident that, though the sun from the point of the mean vernal equinox in 0° 0′ 0″ one year, to the same again in the next, may have described 360°, it cannot have described an entire circumference, in the sense of the entire solar orbit. The entire circumference in this sense can be described only in the mean sidereal year. If the sun, in the mean tropical year, (from the mean vernal equinox to the mean vernal equinox,) describes 360°, in the mean sidereal year, (from a given point of its orbit to the same again,) it must describe $360° + x$: where x is the arc of Precession, and the difference at once between 360° and an entire circumference, in angular motion, and between the mean tropical and the mean sidereal year, in time.

Another very interesting question, suggested by the physical fact of the Precession, is, whether the causes which produce the Precession have any influence on the mean motion of the earth in its proper orbit? to which, according to the physical astronomer, the answer is in the negative. The solar, and lunar, and planetary attraction acts directly on the redundancy of matter, exposed to it at the equator, but neither directly nor indirectly on the mean motion of the earth, so as either to diminish the rate of that motion, or to counteract and retard its natural effect. The effect of the attraction is "a slow motion of the pole of the heavens, the vanishing point of the earth's axis, in a small circle round the pole of the ecliptic every year, which produces an annual displacement of the equinoctial to the same extent (Herschel, Outlines, &c. § 316 and 317); by virtue of which the equinox too retreats on the ecliptic annually in the same proportion; and the equator is every year presented to the sun, so much earlier than the year before," (Herschel, § 383). But were there no such phenomenon as the Precession, or rather no such physical causes in existence as those which produce it, still the mean motion of the earth, and every thing dependent upon it, would be the same as they are at present. It must still require the same time to describe an entire circumference. The only difference would be that this entire circumference would be the mean tropical year as well as the mean sidereal. The mean sidereal year would be neither greater nor less than it is at present, but the mean tropical year

SECTION IV.—*On the Annual Time of the Fasti Catholici, and its proper Type.*

But though the true mean annual time of the present system of things is its mean sidereal year, the *natural* year of the system after all is the mean tropical, not the mean sidereal. This natural year is the cycle of natural production; and the cycle of natural production is the cycle of the seasons; and the cycle of the seasons is the cycle of the solar ingresses; and the cycle of solar ingresses is the tropical year. The cycle of natural production is of too much importance to the being and well-being of every kind and form of life, on the face of our planet, to make it surprising, as we have already observed, that the common sense of mankind, in all quarters and in all ages, has agreed to give the name of the year to the cycle of the seasons, and to consider the natural measure of this cycle the proper annual measure of their proper systems of time. The ultimate standard of reference of the civil year every where, as if by common consent, is the mean tropical, not the mean sidereal year; or if in a particular instance this relation happens to have been inverted, (as among the Hindoos[1],) these cases are exceptions to the general rule, and contrary to the analogy of the civil year and its proper standard of reference, every where else.

In deference therefore both to this universal disposition of mankind to measure the duration of their own system of things by its natural tropical year, and also to the conventional language of chronologers, in speaking of these distinctions, we too shall doubtless be excused, if we agree to assume the true mean annual time of our Fasti as its mean natural, in the sense of its mean tropical, and not of its mean sidereal. The first answer therefore to the question proposed above, is this—That the annual time of these Fasti Catholici

would become equal to the mean sidereal, and neither of them would any longer be distinguishable from the other; and that, as we have already insinuated, for aught we know to the contrary, might be inconsistent with the fundamental relations of one part of the present system of things to another, prescribed by the Creator from the first.

[1] Cf. the F. Cathol. ii. 87, 88 : iv. 42–47 : 81 sqq.

is first and properly the mean natural time of the existing system of things, in the sense of the mean tropical. The mean sidereal enters them also, and always in a certain relation to the mean tropical; and that relation always the same, which was established between them by the Author of each at first, and has never varied since—the nature of which has been explained in the preceding sections: and the true mean sidereal time of the system can at any time be obtained from the representation perpetually given in our Tables of the true mean tropical *. But the true mean annual time of our Fasti, in the sense of the true natural, is the mean tropical of the existing system of things, not the mean sidereal.

As however even the natural annual time of the existing system for civil purposes must have its conventional representative in some form or other of the civil year, and as, among all the possible modifications of this year, the Julian is that which approaches most nearly to an absolute identity with the natural annual, in the sense of the tropical, time of the present system, (and especially with the natural or tropical of the standard of our Fasti [m],) the next answer to the question, proposed above, is *this;* That the mean natural annual time of the existing system of things being its mean tropical, and the standard of this mean tropical being assumed to be that of our Fasti; the proper conventional Type of the annual time of the Fasti, the closest and most exact expression of the abstract idea of the natural annual time of the present system, which could be realised and exemplified in practice perpetually, is the Julian year of the Fasti. The mean annual time of the Fasti is the mean natural year. The civil or positive representative of this mean natural year is the mean or actual Julian of the Fasti.

The meaning of this distinction [n] is that, as the actual proportion of the mean natural year of our standard to the

* See also Sections xvi. xvii. and xviii. *infra,* and the Tables there proposed.

[m] F. Cath. i. 468: ii. 31 sqq.: Origg. Kal. Ital. Preliminary Address, cxix. sqq.

[n] F. Cath. i. 468 sqq.: Introduction 29–37: Preliminary Address, cxxiv–cxxviii.

mean Julian is at all times nearly that of equality; so, for a limited period of time, (viz. until the actual difference between one mean natural year of this standard and one mean Julian has accumulated to one mean solar day and night, 24 hours of mean solar time, complete,) the mean natural year of the Fasti and the mean Julian may be regarded as the same. For that particular interval of time, the mean natural year and the mean Julian may be considered convertible terms; the absolute standard of the Julian may be assumed conventionally as that of the natural; and mean natural or tropical time may be treated as if it had become mean Julian, or mean Julian as if it had become mean natural.

It follows from this assumption that, for the same limited interval of time, the relations of natural annual time and those of Julian annual time to anything else, to which both may be perpetually referrible, must be considered and treated as identical. And as the lesser measures of duration in the form of time necessarily enter the greater, and run through the greater, perpetually, if these lesser measures in contradistinction to the greatest of all, are the day, the week, and the month, in contradistinction to the year, it is very important to observe that, different as the mean natural year and the mean Julian may be in themselves, yet, so long as they may allowably be considered and treated as the same, the relations of the former to the Noctidiurnal, the Hebdomadal, or the Menstrual cycle, for that length of time, must be considered and treated as those of the latter; and *vice versa*, for the same limited interval of time, Noctidiurnal and Hebdomadal must run through Natural Annual time in the same way, and according to the same law, as through Julian.

SECTION V.—*On the Julian Period of the Fasti.*

It follows, from these premises, that whatsoever is most proper to, and most characteristic of, the Julian reckoning of Annual time in terms of Noctidiurnal, Hebdomadal, or Menstrual, for a certain length of time being to be considered and treated as equally proper to and characteristic of that of natural: if, among these properties and characters none is more essential to or more distinctive of the Julian reckoning than the cycle of four years, commonly called the cycle of leap-year, and the cycle of twenty-eight years, commonly called the solar cycle; then for the same length of time, the cycle of leap-year, and the cycle of twenty-eight years, must be regarded and treated as equally characteristic of the natural reckoning of annual time. For this prescribed interval of time, natural annual time must have its proper cycle of leap-year and its proper solar cycle, not only as well as the Julian, but for that length of time absolutely the same with the Julian [o]. Nor could any exception be taken to the admissibility of such assumptions as these, for the administration of the system of time represented in our Tables, which might not with just as much reason be taken to the course of proceeding in the civil calendar at present. According to the principles of the Gregorian correction also, for a certain length of time no difference is supposed to exist either in theory or in practice, between mean natural annual time and mean Julian; for a certain length of time the mean natural year is treated in practice as if identical with the mean Julian, and the administrative rules of the Julian reckoning are applied as the rules and laws of the natural. Nothing more than that is assumed or done in our Tables; and to admit it as allowable in the Gregorian administration of the calendar everywhere, and yet to object to it as arbitrary or precarious in the administration of the system of time of the Fasti, would be the height of prejudice and inconsistency.

But with respect to this length of time—the limit prescribed by the reason of things to the allowableness of such an assumption, (as we have often observed [p],) can be neither more nor less than the interval in which the actual difference of the mean tropical and the mean Julian year attains to the extent of the first and simplest of the measures of duration by time, the noctidiurnal cycle, the period of 24 hours of mean solar time. So long as the actual difference between one mean tropical year and one mean Julian year after another has not yet accumulated to an integral cycle of day and night, it is allowable, for all practical uses and purposes, (such as are proposed by the reckoning of natural time in

[o] Cf. F. Cath. i. 468. Introd. 29-32: 138-142: 170-193. Preliminary Address, ci-cvii: cxxvi.

[p] F. Cath. i. 469: Introduction &c. pag. 32, 33.

terms of civil at all,) to treat them both as if there never had been, or never could be, any difference between them: and in the administration of both in the civil calendar, in the sense of the Gregorian, as we have just observed, they are so treated everywhere at present.

Now this difference between one mean tropical year of the standard of our Fasti (365 d. 5 h. 48 m. 50·4 sec. or 365·24225 d.) and one mean Julian year (365 d. 6 h. or 365·25 d.) is 11 m. 9·6 sec. or 0·00775 d. And this difference in 129 years amounts to 0·00775 d. × 129, or 23 h. 59 m. 38·4 sec., only 21·6 sec. less than the integral period of 24 mean solar hours. And a difference like that being justly considered too trifling to be taken practically into account, the actual difference between the mean tropical year of the Fasti and the mean Julian might be assumed as one entire cycle of day and night in 129 mean tropical years of the Fasti; and consequently the limit prescribed by the reason of things to the length of time for which mean natural annual time, for civil, conventional, and practical uses and purposes, might allowably be regarded and treated as the same with mean Julian, or mean Julian as the same with mean natural, it might be supposed must be this period of 129 mean tropical, or 129 mean Julian years[q].

But as we have already explained, nothing being so indispensable to the decursus of annual time in the form of Julian, as the cycle of leap-year and the solar cycle, and the former being a cycle of four years, and the latter a cycle of twenty-eight years, neither, it is evident, could enter the period of 129 years, and measure it exactly, perpetually. If therefore the Julian Period of our Fasti is to be defined and understood of the interval in which not only the difference of the mean natural annual time of our Tables and the mean Julian accumulates to a day and a night, but also the proper Julian cycle of leap-year, and the proper Julian cycle of 28 years, recur a certain number of times complete, this period of 129 years, though admirably adapted to answer to that description by its agreement with the former of those characters, is disqualified for that purpose by its incompatibility

[q] Cf. Fasti Cath. ii. 27–35: Introduction, &c. 30–32: Preliminary Address, lx. ci–cvii. cxix–cxxii.

with the latter. It cannot be the proper Julian representative of natural annual time from the beginning of things, because it never was, nor ever could be, the proper Julian measure of the cycle of four years and the cycle of twenty-eight years, both separately and at once perpetually.

This being the case, the same reason of things, which prescribed each of these conditions for such a Julian Period as that of our Fasti, suggests also and justifies the only expedient by which both may be realised and exemplified at once; viz. that of a cyclical reckoning of this Period of 129 years, in the form of a Period sometimes greater, sometimes less, than itself, yet always commensurable with each of these cycles, the cycle of four years and the cycle of twenty-eight years, and whether greater or less than 129 years perpetually, yet not more in excess of it at one time than in defect at another. The same necessity, with a view to the same end, obliged the authors of the Gregorian correction to adopt the same or a similar expedient; for the Gregorian correction also has its proper Julian Period, and this Period too, like that of our Fasti, is cyclically reckoned. The only difference between these expedients is that, in the cyclical reckoning of our Tables, it is a Period of 112 years, alternating with one of 140: in that of the Gregorian Calendar it is a Period of 100 years, alternating after a certain order with one of 200 *. But the principle or *rationale* of the

* The difference of the mean Julian year (365·25 d.) and the mean Gregorian (365·2425 d.) is 0·0075 d.: and this difference left to itself would accumulate to three days in 400 years: for 0·0075 d. × 400 = 3·0 d. exactly.

The Gregorian correction consequently had to provide for the suppression of three days in the reckoning of the natural year on the Julian principle every 400 years; and the rule, prescribed for that purpose, was the omission of the leap-day thrice in four hundred years, by making every hundredth year, reckoned from March 1, A. D. 1600, a common year, and every 400th, a leap-year.

An equal division of this period of 400 years, such that each of its parts should have been commensurable with the cycle of leap year also perpetually, would have required two periods of 132 years, and one of 136, respectively; in the former of which the difference of the mean natural year of the Gregorian standard, and the mean Julian, would have amounted to 0·0075 d. × 132, or 23 h. 45 m. 36 s. (14 m. 24 sec. less than the entire period of 24 hours,) and in the latter, to 0·0075 d. × 136, or 1 d. 0 h. 28 m.

reckoning is the same in both; and if no exception can reasonably be taken, on that account, to the Gregorian administration of the Calendar at present, none can fairly be taken, on the same account, to the rule of our Tables from the first.

The Julian Period of the Fasti then is the Cyclical Period of 112 tropical years at one time and that of 140 at another; the nearest approach to the absolute standard of 129 years, divisible by the cycle of 4 and by that of 28, which in the nature of things was possible. And these, in the administration of the annual time of our Fasti, are considered as so many Julian, as much as so many tropical years; but only as long as the natural annual and the Julian annual time of the Tables are supposed to be going on through each of these Periods together. And as by hypothesis the length of each of them measures the interval in which the actual difference between the mean tropical year and the mean Julian accumulates to a day and a night, (or to what may be cyclically assumed as a day and a night,) complete, the absolute number of days and nights in each (nominally Julian as they all are) is one less than in one Period of 112, or one of 140, Julian years. In the Period of 112 mean Julian years it is 40,908: in that of 112 mean tropical of our standard, reckoned for one Period as Julian, it is 40,907. In the Period of 140 mean Julian years, it is 51,135: in that of 140 mean tropical, reckoned for the Period as Julian, it is 51,134. And this difference between them at last, after going on together so long before, and being treated as if they were the same in all respects, is brought about in the administration of both in our Tables, through all these Periods alike, without any change in the cycle of leap-year, or in the cycle of 28 years, simply by suppressing the leap-day in the *last* year of the *last* cycle of leap-year *, which enters

48 sec. (28 m. 48 sec. more than 24 hours exactly—twice as much in excess in this period as it was in defect in the other).

As to the cycle of 28 years, it could not by any contrivance have been rendered compatible with the administration of the civil calendar on this principle at all, as it is with that of our Fasti perpetually.

* On the assumption indeed, explained and defended in the Preliminary Address to the Origines Kal. Italicæ (page lvii), that each of our Julian

the Period in its proper order of time; and thereby assigning one day less than usual to the Julian reckoning of the last year of the Period. The tropical Period of 112 years, consequently, treated in our Tables as Julian, has 28 cycles of leap-year, and four cycles of 28 years, but only 27 leap-days; and the tropical Period of 140, similarly treated in our Tables, has 35 cycles of leap-year, and five cycles of 28 years, but only 34 leap-days.

SECTION VI.—*On the Epoch of the Julian Period of the Fasti, as that of the mean Vernal Equinox for the time being.*

The natural epoch of mean annual time in the sense of mean tropical is the mean vernal equinox; and the proper Julian epoch of annual time in this sense is the Julian date of the mean vernal equinox. And if it may be assumed that the first natural day of the present system of things was the mean vernal equinox for a certain meridian, and the Julian date of that mean vernal equinox was April 25 at midnight, (an assumption which, after the proofs of its truth produced in the first two Parts of this work [q], and after the fresh, and if possible still more conclusive, proofs to the same effect, brought to light in this third Part, we are justified in considering to be matter of fact.) it will follow that the proper Julian epoch of the first of our Periods could not, or ought not to, have been any Julian term but the Julian date of this

Periods, from the moment it enters the Tables in its proper order of succession, is to be considered as having virtually been in possession of them from the first, and Julian time to have been brought down, according to its proper law, in the shape of the time of that Period, to the actual moment of its ingress, there will be no omission of the leap-day in the regular years of the cycle, even at these epochs of the transition of the Julian time of our Tables from one Type and one Period to another: only it will be supplied by the cycle of the leap-day in the proper solar cycle of the incoming Type; see Introduction to the Tables, &c., 155 *n.*: 157 *n.*

And if the Julian time of our Tables in every Type is to be reckoned from January 1 at midn. according to the strict Julian rule at present, and the seat of the leap-day in the proper years of the cycle is to be between the month of February and that of March notwithstanding; even in the actual administration of the Tables the ordinary leap-day might be said to come in, and in the ordinary place of the proper cycle of leap-year of every successive Period, in the very first year of the Period.

[q] See the Preliminary Address, pagg. lxxx-cxxiv.

true Natale Mundi, the Julian date of this primary vernal equinox—the mean vernal equinox, for the meridian of the ancient Jerusalem—April 25 at midnight, B.C. 4004 [r].

And this being assumed as the proper Julian epoch and Julian style of the first of our Periods, with respect to the epochs and style of the rest, the conclusion already established of the relation of the mean natural annual time of the present system, in the sense of the mean tropical, to its true annual time in the sense of the mean sidereal, and of the descent of the former on the latter, (i. e. the descent of the mean vernal equinox of the system on itself perpetually,) two terms in the order of the Noctidiurnal cycle, and two feriæ in that of the Hebdomadal, from Period to Period—this conclusion still holding good, and every thing being supposed to have begun and proceeded in conformity to that relation; then, if the proper Hebdomadal style of the mean vernal equinox, for the given meridian, at the beginning of the first Period was the *feria prima* at midnight, the proper hebdomadal style of the mean vernal equinox for the same meridian at the beginning of the second Period must have been the *feria sexta* at midnight, and that of the mean vernal equinox for the same meridian at the beginning of the third must have been the *feria quarta* at midnight, and so on perpetually. And the proper Julian style of the first of these equinoxes, under its proper Hebdomadal, being assumed April 25, the *feria prima* at midnight, it would seem to be only agreeable to analogy and the reason of things that the Julian style of the next in order to the first, under its proper Hebdomadal style also, should be assumed April 23, the *feria sexta* at midnight, and that of the third, April 21, the *feria quarta* at midnight, and so forth—two terms lower in the order of the Julian notation from Period to Period, corresponding to the two terms in descent in the order of the Noctidiurnal, and in that of the Hebdomadal, cycle from Period to Period also. Whereas, the actual march of the Julian epochs of our several Periods is from April 25 at midnight to April 24 at midnight, and from April 24 at midnight to April 23 at midnight, and so on—one term only

[r] Cf. Fasti Cath. iv. 503–523. Addenda and Corrigenda. Preliminary Address, cxiii–cxix.

lower from Period to Period in the order of the Julian notation, though two terms lower in the order of *feriæ*, and in the order of the Noctidiurnal cycle.

In explanation of this anomaly, (if it is to be considered such,) it may be observed, i. That one mean natural year being an integer of its proper kind, any number of mean natural years, as a sum or collection of such integers, is an integer or unit also, the same in general with those of which it is made up; and in a series of such units, both individually and collectively, (such as the natural Periods, and the Julian Types of those Periods, of our Fasti,) while each has its proper place in the general succession, each is numerically distinct from the rest: each is one of a succession of individuals like itself, none of which has any connection with, or dependence upon, that which precedes or follows it, except through the relation of all in common to something else, which under the circumstances of the case can be nothing but the Noctidiurnal cycle, and the Hebdomadal cycle, entering them all, and running through them all, alike. These two cycles continuing the same in themselves, yet running through all these Periods alike; it is the change of relation to these in particular, which takes place at the ingress of each of our Periods after the first, and not the change of style, which takes place at the same time too, which really discriminates them asunder. That change of relation to those two cycles at the ingress of each of these Periods is prescribed by the laws of nature; the change of style at the same point of time may be a necessary accompaniment of it, but cannot be considered prescribed by the laws of nature in the same sense and in the same way as that. A change in the Hebdomadal character of the Period, as a necessary expression of the change which has actually taken place at each of these times in the relation of annual time to noctidiurnal, is inevitable, to discriminate one of these Periods in the general order of the succession from another; a change in the style or nomenclature may be a consequence of this, but only because the same change of relation to the Noctidiurnal and the Hebdomadal cycle, which has taken place in the Period just at this time, extends to each of its parts. The first day of the Period having changed its relation to these two cycles, at the ingress of each of these Periods, every succeeding day which is liable to enter it after the first, must change its relation to the same two cycles in the same proportion also; and these changes in the relations of the Period, both in the whole and in its component parts, must be repeated and expressed by a change in the style of the Period—extending to all its parts.

The style of the Period discriminates the *parts* of the Period, (i. e. the individual cycles of day and night of which it consists,) one from another. Every day and night in each of these Periods must have its proper place in the Hebdomadal cycle of the Period, and therefore its proper style, to distinguish its proper numerical position in the order of that cycle, from that of any other which enters it also. But as the proper constituent parts of one of these Periods can never be numerically those of another, so neither can the proper style of one of these Periods and of its parts be that of another. The style of each Period is for the use of the Period, and that alone; it begins and ends with its proper Period. Nor is there any actual necessity, while the style of one can never be really the same with that of another, that it should be even nominally or apparently so. The style of the Period is the order of the parts of the Period in the cycle of day and night and the cycle of feriæ, expressed by conventional signs. That order is fixed by the laws of nature; and must proceed perpetually in conformity to them: those conventional expressions are arbitrary and positive; and every nation which has had a different civil calendar, without any difference in the things expressed themselves has had a difference in the form and mode of the expression. The style of our Periods consequently was that one of their proper characters which *a priori* was to be regarded as the least prescriptive, and the least restricted to one particular rule and method, of all. It might have been the properly Julian, or a modification of the properly Julian; it might have been that of any calendar distinct from the Julian; or it might have been the style of no calendar in use at present, or heretofore, but one which we had contrived for ourselves; and yet, in each of these cases alike, as a means of discriminating one of our Periods from another in the general succession, and the parts of each

Period *inter se*, it might have answered the end intended by it.

ii. It may be observed that a descent of two terms from Period to Period in the order of the Julian notation, or style of the Period, corresponding to that of the head of the Period, two terms in the order of the Noctidiurnal and the order of the Hebdomadal cycle, from Period to Period also, would have supposed the standard of reference of the style or Julian notation of our Tables from the first, to have been the decursus of the Noctidiurnal cycle, and through that, of the Hebdomadal; contrary to the matter of fact for the first half of the Tables at least, from B. C. 4004 to A. D. 225—according to which the true standard of reference of the Julian style of the Tables, for the whole of the interval in question, was the decursus of Annual, as comprehending Noctidiurnal and Hebdomadal in effect perpetually, not that of Noctidiurnal and Hebdomadal, as entering into and running through Annual. In other words, this rule of the descent of the Julian notation of the Tables, from April 25 to April 23, and from April 23 to April 21, and so on, if adopted from the first, would have implied that the proper style of the Noctidiurnal cycle was as competent to give the law, (and in fact must as truly have given the law,) to the proper Julian style of the Annual, from the very beginning of things as from A. D. 225—instead of the contrary, that the proper style of the Annual and its component parts, both at first and for a long time after, did *de facto* give the law to that of the Noctidiurnal and Hebdomadal, as entering the Annual [s].

iii. The actual law of the recession of mean annual tropical time on mean Julian, according to which they are proceeding together at present, being that of one day for each of our Periods, and the corresponding recession of the Julian style of the former on that of the latter, being one term in the order of the Julian notation, in the same length of time also; it is more agreeable to the analogy of the course and succession of natural and Julian time at present, that the style of our Periods also, throughout our Tables from first to last, should descend one day in the order of the Julian nota-

[s] Cf. Fasti Catholici, i. 452 sqq. Tables i. and ii. Type i. and ii.

tion for every Period, than two terms before a certain period in their decursus, and one term only after it.

iv. By no other arrangement but this could the Julian style of our Tables, brought down from B. C. 4004, according to one and the same law, have been made to fall in, at the proper time, with the Julian style of the present day, and unchanged and unmodified itself to pass into that, and ever after be carried on in that. And as a consequence of no other arrangement, as we shall see hereafter, could the Julian style of the present day, carried back according to one and the same law, (that of the actual administration of the Julian calendar at present,) to any assignable epoch, however remote, within the compass of time embraced by our Tables, have been found to coincide with that of our Tables at the same point of time also; i. e. according to no other arrangement could the mean vernal equinoxes, determined by calculation at the present day for the beginning of each of our Periods, have been found the same in terms as those of the Tables themselves *.

* It must be evident, under the circumstances of the case, that, if there is to be no interruption in the style of the ingresses of our Periods, in the sense of that of the equinoxes of the time being, if they must go on descending from April 25 at midnight to April 24 at midnight, and from April 24 at midnight to April 23 at midnight, the nomenclature of our Periods must continue the same, though the consequence of that continuance should be the anomaly, that, while the Ingresses, in the sense of the Equinoxes, recede two terms in the order of the Noctidiurnal cycle, and two in the order of *feriæ*, from Period to Period, they recede one term only in the order of the Julian notation.

But this anomaly is more than compensated by the advantage of an uniform Julian style in all our Periods from first to last; to which only the coincidence is due that the style of our Tables at a given time, and that of the present day, carried back to the same time, without any perceptible distinction between them, without the necessity of any reduction of one to the other, fall in with each other. This could not possibly have been the case, if the Julian style of our Tables, however correctly determined in the first instance to that of the mean vernal equinox, in the style of the present day, April 25 at midnight, had proceeded ever after *pari passu* with the descent of the equinoxes in the order of *feriæ*, from April 25 the *feria prima* at midnight, to April 23 the *feria sexta* at midnight, and from April 23 the *feria sexta* at midnight, to April 21 the *feria quarta* at midnight, and so on.

The rule of our Tables in this use of an uniform Julian style from first

v. The absolute order of the noctidiurnal cycle in itself, and that of the hebdomadal in the noctidiurnal, as originally

to last is founded in the same reason of things as the rule of the Gregorian calendar, in the same respect, at present. Strictly speaking, and on abstract and *a priori* grounds of propriety, a fresh style would be as necessary for the calendar at present, as often as a given *feria* in the order of the Hebdomadal cycle, in the same year of the cycle of leap-year, began to be represented by a different Julian term, (by March 1, for instance, instead of February 29, by March 2 instead of March 1, and so on,) i. e. as often as a fresh Gregorian Type of Annual natural time, in the sense of Annual civil, entered the calendar at present, as for our Tables, as often as a fresh Julian Type of the same thing enters them. And if a change of style, every time the Gregorian calendar is corrected at present, would have been a source of the utmost confusion, (so easily obviated, by the simple expedient of retaining the style, even when the meaning of the style, i. e. the *feriæ* of the style, becomes different,) so would it have been with our Tables.

The chronologer, the historian, and the astronomer, each for his proper use and purpose, carry back the proper Julian style of the present day to any former epoch, howsoever remote, with an implicit conviction that the style of the present day is just as competent to represent the similar one of any former day. And though this assumption, in all its bearings, is not true, yet so far as concerns the nominal agreement of the proper Julian style of every former æra and that of the present, the style of our Tables confirms the assumption, by the matter of fact, all along—simply because of its use of a continuous Julian notation, a nomenclature as properly Julian at one time as at another, yet running on without interruption through all times alike.

The order of a given Julian term at a given point of time in the general succession of the Noctidiurnal cycle, or in the particular succession of the Hebdomadal, is a different question. The Hebdomadal style of the Julian time of the present day cannot be carried back to any former time from the present, without such and such corrections, from a certain point of time backwards at least, of which chronologers have never yet been aware. It is not often however, even for the purposes of history, that this further distinction requires to be taken into account; and though it cannot always be correctly known from the solar cycle which chronologers commonly carry back, it may uniformly be so from the solar cycle of our Tables. But the first and most indispensable condition of a general calendar, intended, like the Julian, to serve as the exponent of Annual time in the sense of civil, in Noctidiurnal and Hebdomadal, every where, and at all times, is an uniform style; so that carried, whether backwards or forwards, it shall always appear to use the same symbols, and to speak the same language—and consequently be as available for interpreting the language of any other calendar, and rendering it intelligible also, at one time as at another.

established at the beginning of things, remaining the same from Period to Period, and the recession of the head of the natural year in both from Period to Period remaining the same also, then, if the hebdomadal style of the mean V. E. in the first of our Periods was the *feria prima* at midnight, and that of the mean V. E. in the second was the *feria sexta* at midnight, and the proper Julian style of the former be supposed to have been April 25 at midnight, whether that of the latter is to be supposed April 24, or April 23, at midnight—the *feria* in either case continuing the same—is a question of names, not of things. It is manifest that, under such circumstances, there could be no real difference between the Julian style, in the one case, and that in the other; or not more than there is at present between a given Julian date and a given Gregorian one. If the Julian style of the *feria sexta* is assumed to be April 24, at the beginning of the second period, it is Gregorian; if it is assumed to be April 23, it is the Julian, corresponding to that Gregorian. It has been shewn in the Preliminary Address of our Origines Kal. Italicæ [t], that the style of each of our Periods, one after another, in comparison of that before, is Gregorian; and it will more clearly, we hope, appear hereafter that mean Julian time in the sense of mean natural—mean Julian time assumed and treated as the type and representative of mean natural—is that modification and form of Julian, and that only, which is known by the name of Gregorian. Mean Julian time, constantly equated to, and substituted for, mean natural, never was, nor ever can be, any thing but mean Gregorian.

With respect then to the epochs of the Julian Periods of the Fasti, and to their proper style: the epochs of those Periods are the mean vernal equinoxes, at the beginning of each of the tropical Periods of the Fasti, corresponding to those Julian ones—and the Julian dates of those equinoxes at such points of time are the Julian style (determine at least and regulate by their own style, at such points of time, the proper Julian style) of each of these Periods one after another perpetually; descending one term in the order of the Julian notation for every Period after the first, yet always agreeable

[t] Pag. xliv.

to the analogy of the Julian style at present, and such as astronomy itself would determine, at the same points of time, by its own calculations, in the style of the present day: the first, April 25, the *feria prima* at midn. B. C. 4004; the second, April 24, the *feria sexta* at midn. B. C. 3892; the third, April 23, the *feria quarta* at midn. B. C. 3752—and so on, through the first xxxiv Periods of our Tables at least.

SECTION VII.—*On the common Julian Epoch of the Julian Periods of the Fasti, April* 25.

But though the true account of the Julian Periods of our Fasti is *this*—That they are the conventional representatives of certain natural Periods, treated *pro tempore* as Julian, and that their proper Julian style is derived from the proper Julian epoch of the first day of each of those natural Periods, (the mean vernal equinox for the time being,) and from the necessity of the case cannot continue the same, but must go on from Period to Period descending in the order of the Julian notation; yet as a positive and conventional expression of this kind, in relation to successive Periods, a common Julian epoch may be conceived and proposed of them all.

It is evident that in a simple Julian Period of 112 or 140 years in length, containing the same number of days as a proper Julian Period of that length would do, and a perfect measure of the cycle of 4 years and of the cycle of 28 years, the same Julian term would return to the same *feria* of the Hebdomadal cycle in the same year of the cycle of leap-year, and in the same year of the solar cycle, perpetually; and if it was April 25, the *feria prima*, at the beginning of the first Period, it would be April 25, the *feria prima*, at the beginning of every other. It is evident too, from the inspection of our Tables, that after a time (A. D. 225), this begins to be the actual law of the decursus of Julian time in Hebdomadal, even in the Tables of the Fasti. And though for the interval before this time the literal observance of the same law cannot be seen in the actual administration of our system, a nominal exemplification of it, and an approach to the literal observance, as close as the nature of the case will admit, may be conceived even for them.

For the proper Julian epoch of the first of our Periods being assumed April 25, the *feria prima* at midnight, and that of the second April 24, the *feria sexta* at midnight; it could make no difference to the course of the proper Julian time of this second Period whether it began to be reckoned from April 24, the *feria sexta*, or from April 25, the *feria septima.* And in like manner, the proper Julian epoch of the third Period being assumed April 23, the *feria quarta* at midnight; it could make no difference to the Julian reckoning of this Period, whether it set out from April 23, the *feria quarta,* or April 24, the *feria quinta*, or April 25, the *feria sexta*—and so on, through successive Periods—the proper Julian epoch of a preceding Period being assumed as that of the next to it, or the proper Julian epoch of the first of all as that of the rest in common—the feria of ingress in the first Period only being lowered one term for that of every succeeding one. On each of these assumptions the course and succession of Noctidiurnal, Hebdomadal, and Annual time, in terms of Julian, would go on through each of our Periods alike.

It is evident therefore that it could make no real difference in this respect, whether each of our Periods was supposed to have its proper Julian epoch one term lower in the order of the Julian notation than that of the preceding perpetually, or all to have nominally the same Julian epoch in common, and *that* the proper Julian epoch of the first in particular, the proper Julian style of the first day of the first of the natural Periods represented by these Julian ones, the first mean vernal equinox, April 25. And as this is not only substantially the same as the other, but most agreeable to the name and idea of a Julian succession *per se*, as well as to the analogy of that succession at present, we have made it the basis of the technical administration of the annual time of our Tables, as the Julian representation of the mean natural, from B. C. 4004 to A. D. 225 at least; as we explained more at large in the Preliminary Address of the Origines Kalendariæ Italicæ [v].

We admit into our Tables therefore two Types of the Julian Period; one which we may call the NATURAL-JULIAN, another which we may call the POSITIVE or CONVENTIONAL.

[v] Pag. xxxix–xliv : liv–lxiv.

The former is the Period of 112 or 140 mean tropical years, treated *pro tempore* as so many mean Julian; always bearing date on the mean vernal equinox for the time being, and descending one term in the order of the Julian notation, two terms in the order of *feriæ*, from Period to Period. The latter is this same Period of 112 or 140 years considered as nominally Julian, and therefore beginning on the same Julian term, in the same year of the cycle of leap-year, and in the same year of the solar cycle, in every instance alike; yet differing in reality from a simple Julian Period of the same kind by beginning not on the same *feria* also in the same year of the cycle of leap-year, and the same of the solar cycle, but on the *feria* next before it. In the Positive-Julian, consequently, the Julian epoch remains the same in terms from Period to Period, but recedes one term in the order of *feriæ*: in the Natural-Julian the epoch recedes one term in the Julian notation and two terms in the order of *feriæ* for every Period. And at the Ingress of a given Period of both kinds together, the style and the *feriæ* of the Natural-Julian are as many terms below the style and the *feriæ* of the Positive-Julian, as there are Periods between the first of each kind and this given one of each, the ingresses of which are thus coinciding [x].

SECTION VIII.—*On the decursus of the Julian Annual Time of the Fasti in the Noctidiurnal and the Hebdomadal; and the mode in which it is carried on from Period to Period.*

The Julian year, though commonly called a year, being after all only a certain complex of noctidiurnal cycles, recurring in a certain order perpetually; it is no wonder that every form of this year, which has its proper cycle of leap-year and the leap-day, should return to the relations of origination in the Noctidiurnal cycle, and through that in the Hebdomadal, with every recurrence of its proper solar cycle, which is simply its proper cycle of leap-year multiplied by the Hebdomadal cycle. And were each of the Julian Periods of our Fasti a strictly Julian one of its kind, and did it really contain the same complement of Noctidiurnal or Hebdomadal

[x] On the subject of this Section in general see the Preliminary Address of the Origg. Kal. Ital. xxix—lxxx.

time, as Annual in the sense of Julian, and of the same length as one of our Periods, at present—nothing would be more certain than that, if the first of the series entered our Tables on April 25, the *feria prima* at midnight, every succeeding one would do the same; and in fact that this same term of origination, April 25, must have been found recurring, both in its proper Julian and in its proper Hebdomadal style, with every recurrence of its proper solar cycle, (the cycle of 28 years,) and that, as we have shewn elsewhere[y], the proper solar cycle of the Julian time of the existing system of things.

But the case is different with Natural Annual time in contradistinction to Julian. Annual Julian time, under all circumstances, is only a larger form of the Noctidiurnal cycle. Annual Natural, in the sense of tropical, is not reducible under the category of Noctidiurnal at all. It is a measure of time *sui generis*. The Noctidiurnal cycle is the measure of duration by the revolution of the earth about its own axis: the Annual cycle is the measure of duration by the revolution of the earth about the sun. Each is an unit or integer of its kind, the same with itself perpetually, and neither of them commensurable with the other. It seems to have been a constitution of nature from the first, that no unit of this kind, as one of the appointed measures of duration by some form or mode of time, should be commensurable with another, or liable to pass into and be merged in another; or if at all, only in proportionably long and almost incalculable periods of duration—such as may possibly find their place in the scheme of chronology, present from the first to the Divine apprehension, and contemplated by the Divine Mind perpetually, but excluded by their magnitude itself from the scope and comprehension of the Human[z].

It is manifest therefore that the actual rule of our Tables, according to which every 112 or 110 mean natural years are treated as so many mean or actual Julian, is a conventional one; justified indeed by the necessity of the case, and resting at bottom on the assumption that in the civil or calendar reckoning of Noctidiurnal, Hebdomadal, Menstrual, and An-

[y] Introduction to the Tables of the Fasti, pag. 148 sqq. Preliminary Address, pag. civ. sqq.

[z] Cf. Fasti Cath. iv. 553 *n.* Appendix.

nual time, nothing can possibly find a place, as a constituent part of them all at once, except integral cycles of day and night, entire periods of 24 hours of mean solar time, but involving in the assumption itself a liability to an error in comparison of the truth, and an error of excess not of defect.

The actual Julian year contains 365 entire cycles of day and night, every three years, and 366 every fourth. The mean Julian year contains 365 and one quarter, perpetually. Consequently four actual Julian years, and four mean Julian, contain the same number of integral cycles of day and night, 1461 exactly. The difference of the mean tropical year of our standard, and one mean Julian, is 11 m. 9·6 sec.; and as this accumulates to a day and a night (one integral period of 24 hours) only in 129 years, the ἀποκατάστασις of Noctidiurnal time in mean Natural Annual of our standard, and in mean or actual Julian, both at once, could not be brought about in less than 129 years of each kind; nor even then without a remaining difference of 21·6 sec. of mean solar time, in defect of one entire period of 24 hours[a]; a defect which could not be taken into account in the decursus of Noctidiurnal and Annual time of both kinds at once, in the shape of one entire cycle of day and night, in less than the great Period of 516,000 years[b].

It follows from these premises, that, if the course of Natural Annual time in Noctidiurnal and Hebdomadal is one thing, and that of Julian in the same is another, even as both are going on in them at present, and have been ever since A. D. 225, *a fortiori* must the former have differed from the latter in these respects at first. Recession of Annual time in the sense of Natural, in the order of Noctidiurnal and Hebdomadal at a certain rate, and non-Recession of the same, in the sense of Julian, is the law of the decursus of both in each of these cycles at present; and Recession of Annual Natural in the same two cycles, at a certain rate, and in the same length of time (that of our Julian Periods), and Recession of Julian Annual along with it at a certain rate and in the same length of time also, was the law of the decursus of both in the same two cycles at first: and it is a

[a] See supra, page xxxviii.

[b] Cf. Fasti Cath. ii. 33–35: iv. Append. 522, 523. 550–553, and note, p. 553.

necessary inference from this state of the case, that if the epoch of Natural Annual time cannot continue attached to the same Julian term, and the same *feria* of the Hebdomadal cycle, from Period to Period, at present, much less could it have done so before.

It would be perfectly true to say that 112 natural years of our standard (365·24225 d. × 112) must contain 40,907 d. 3 h. 10 m. 4·8 sec. of mean solar time, and 140 (365·24225 d. × 140) 51,133 d. 21 h. 57 m. 36 sec. of the same: and the former of these, for the purpose of a cyclical reckoning, might be assumed at 40,907 d. and the latter at 51,134 d. complete. But it would not be true to say 112 such natural years contained 40,907 revolutions of day and night, or 140, 51,134, reckoned from one and the same point of the Noctidiurnal cycle perpetually.

In like manner, it would be true to say that 40,907 periods of 24 hours of mean solar time could not contain less than 5843 cycles of seven such periods at a time, or cycles of weeks, and 51,134 could not contain less than 7304. But it would not be true to say that the former contained 5843, and the latter, 7304, cycles of seven such periods, reckoned from one and the same point of the Noctidiurnal cycle perpetually.

The meaning of these distinctions is, that so long as there was yet no standard, to which the relations of mean Annual time, (in the sense of mean natural or tropical,) to Noctidiurnal and Hebdomadal, could be constantly referrible except itself; the actual relation of the first mean vernal equinox to each of these other cycles, under its proper Julian style of April 25, having been determined *de facto* to the *feria prima* at midnight for the proper meridian; then by the operation of the law of Precession, explained in the first two sections of these Prolegomena, traced through the first 56 years of our first Period, (as may more clearly appear hereafter [c],) the 57th mean vernal equinox, at the ingress of the 15th cycle of leap-year, and the third solar cycle of the Period, instead of being found attached to midnight on the *feria prima*, like the first, would be found *de facto* attached to 13 h.

[c] See Sections xvi and xvii of these Prolegomena, infra.

35 m. 24·0 sec. from midnight on the *feria septima*. And this being cyclically assumed as the point of noon, in the decursus of the same Noctidiurnal cycle and from the same ingress—the point of midnight perpetually—just midway between midnight on the *feria prima* and midnight on the *feria septima*, it is manifest there would be just as much reason to reckon the decursus of the annual time of the Period under its proper Julian style in Noctidiurnal and Hebdomadal, through the next 56 years of this Period, from the point of midnight on the *feria septima*, as from the point of midnight on the *feria prima*. And this being done accordingly, though the first week of the Period began with being reckoned from midnight on the *feria prima*, the last will have to be reckoned from midnight on the *feria septima*; and the last week of each of our Periods (whether of 56 or 112 or 140 years in length) being a cycle of six days only instead of seven, the necessary consequence of the change in the epoch of the Hebdomadal time of the Period, thus introduced in the course of its decursus itself, will be that the last six days of the Period, beginning to be reckoned from the *feria septima* at midnight, must come to an end 24 hours from midnight on the *feria quinta*, and the first week of the next Period must begin on the *feria sexta* at midnight.

Such is the *rationale* or *principle* (explained in brief) of the process by which the natural Annual time of our Tables, considered and treated for a certain length of time as Julian, so long as it had yet no standard of reference but itself, is carried on and brought down from Period to Period in Noctidiurnal and Hebdomadal perpetually. And this being the case, as we admit into our Tables from the first two Types of Julian Annual time, Natural-Julian, and Positive-Julian, (both of them, in the first instance of all, absolutely the same,) so the Julian date of this first Period of both kinds, and the Hebdomadal date, or *feria* of origination, of this first of both kinds, being given by hypothesis, nothing is easier than to assign and explain the rule by which the proper Julian date and the proper Hebdomadal date of every subsequent Period in its turn may be derived from those of this first.

i. The Julian date of the first Natural-Julian Period being

April 25 at midnight, that of the second is April 25 – 1 (April 24) at midnight: that of the third is April 25 – 2 (April 23) at midnight, and so on; i. e. it is the Julian date of origination minus N: N being the number of Periods, from the first exclusive, to any given Period, after the first, inclusive.

In like manner, the Julian and Hebdomadal date of the first Natural-Julian Period being April 25, the *feria prima* at midnight, that of the second is April 25 – 1 (April 24) the *feria* 1 – 2, the *feria sexta* at midnight; that of the third April 25 – 2 (April 23) the *feria* 1 – 4, or the *feria quarta* at midnight, and so on; April 25 – N, the *feria* 1 – 2 N perpetually: N being the number of Periods between the first, and any assumed one, after the first, as before.

ii. The Julian date of the first Positive-Julian Period being April 25 at midnight, that of every succeeding one will be April 25 – 0 × N—that is, April 25 at midnight too—the same in terms with that of the first, whatsoever the number of Periods between the first and any assumed one, later than the first, perpetually. And the Julian and Hebdomadal date of the first Positive-Julian Period being April 25, the *feria* 1 at midnight, that of the second is April 25, the *feria* 1 – 1, the *feria* 7 at midnight; that of the third April 25, the *feria* 1 – 2, or *feria* 6, at midnight, and so on; April 25 the *feria* 1 – N, (where N is the number of Periods as before,) —one term lower for every Period in the order of *feriæ*, though not in that of the Julian notation.

Or, with respect to the decursus of the Hebdomadal time of our system, the rule which regulates it may be briefly stated as follows.

The *feria* of origination of any of these Periods of either kind being given, the Hebdomadal time of the Natural-Julian Period is carried on, from Period to Period, through an epact of five terms, on this *feria* of origination perpetually, and that of the Positive-Julian through an epact of six: by which we mean that, whatsoever the *feria* of ingress of this first Period, the addition of five terms to it, in one of these cases, and that of six in the other, will give you the *feria* of ingress of the next in order perpetually: the reason being that, as the last week in each of these successions, (as we have explained,) is necessarily to be reckoned from the *feria* next lower than that of origination, and this last week in the Natural-Julian succession is a cycle of six days, and in the Positive-Julian a cycle of seven days, it comes to the same thing whether you reckon this week as one of six days from the *feria* next lower than that of origination, or as one of five from the *feria* of origination, in one of these cases, or as one of seven days from the next lower *feria*, or one of six from the *feria* of origination, in the other. The *feria* of origination, or *feria* of ingress, of the next Period of either kind, to which you will thus be brought, must be the same in each of these cases.

And this being the simplest rule of the kind which could have been laid down, and requiring for its constant application no datum except the *feria* of origination of the very first Period in our Tables, (which, as we have explained, is both the first Natural-Julian and the first Positive-Julian also,) it is that by which the Hebdomadal time of our Periods was represented as carried on in the Tables, compiled for that purpose, in the first Part of the present work [d]. For the *feria* of this first of both kinds being given by hypothesis, the *feria* 1 at midnight—in the Natural-Julian succession the *feria* of the second will be the *feria* 1 + 5 or *feria* 6ª at midnight; that of the third, the *feria* 6 + 5 or *feria* 4ª at midnight; that of the fourth, the *feria* 4 + 5 or *feria* 2ª at midnight, and so on. In the Positive-Julian the *feria* of the second Period will be the *feria* 1 + 6 or *feria* 7ª at midnight; that of the third will be the *feria* 7 + 6 or *feria* 6ª at midnight: that of the fourth the *feria* 6 + 6 or *feria* 5ª at midnight, and so on, through the first half of our Tables, from B. C. 1004 to A. D. 225, at least *.

* The rule, prescribed above, for carrying on the Julian time of our Tables in its proper Hebdomadal as well as Julian style perpetually, it is manifest, is the same in principle with that which was laid down in our Fasti Catholici, (i. 628–632,) for carrying on the succession of Vernal Equinoxes, from Period to Period, in the proper Equable and proper Hebdomadal style also; viz. at the end of every Equable Period of 112 years to add 26 days to the Thoth of the next Equable Period, for the equable style of the equinox, and 26 terms = 5 in the order of *feriæ*, to

[d] See the F. Cath. i. 456, Table i. Type i. Divisions C and D: 623. Divisions BB, &c.

the Hebdomadal character of this next Thoth, for the Hebdomadal style of this equable date of the equinox; and at the end of the Equable Period of 140 years to add 33 terms to the Thoth of the next Period for the one, and 33 terms = 5 to the *feria* of that Thoth for the other.

Here however a difficulty may possibly occur to the reader, which it may be desirable to anticipate and explain. The number of days and nights in the equable Period of 112 years is 40,880, that in the Julian is 40,907: the number of days and nights in the equable Period of 140 years is 51,100, in the Julian Period of 140 years, is 51,134: and the difference between the two Periods in the former case being 27 days, and in the latter 34, it might be supposed *a priori* that in order to the recovery of the first day of the next Natural Period from the first day (or Thoth) of the next Equable one, 27 days would be necessary in one of these cases, and 34 in the other.

The explanation of this seeming anomaly is very simple. The natural Period of 112 years, regarded as Julian, contains 40,907 days and nights, or rather periods of 24 hours of mean solar time, but not all reckoned from the same point of the Noctidiurnal cycle perpetually; and these 40,907 cycles of day and night are necessarily equal to 5843 cycles of sevens at a time, and six days over of one more, but not all reckoned from one and the same *feria* of the Hebdomadal cycle perpetually. If the first of them began to be reckoned from the *feria prima* at midnight, the last, as we have already explained, must end with being reckoned from the *feria* 7ª at midnight. And so of the natural Period of 140 years, treated as Julian also, containing 51,134 days and nights, or periods of 24 hours of mean solar time, and 7304 cycles of sevens, and six *feriæ* of one more. The equable Period of 112 or 140 years is simply the cycle of 365 days and nights, 112 or 140 times repeated; and like the simple succession of day and night, being always equal to, and the same with, itself, from whatsoever point of the Noctidiurnal cycle it is supposed to set out, at the same it must begin and end perpetually: and the number of days in 112 equable years, 40,880, being equal to 5840 cycles of sevens exactly, and the number in 140, 51,100, being equal to 7300 exactly—every such cycle in either, like every simple Noctidiurnal cycle which enters it, must begin and end alike; and if the first sets out from a given *feria* of the Hebdomadal cycle, and a given epoch of that *feria*, the rest must do so too.

Supposing then a Natural Julian Period of 112 or 140 years, and an Equable one of 112 or 140 also, to have begun together on the same Julian term, and the same Hebdomadal *feria*, and at the same point of that *feria*, the point of midnight—and both to have gone on together to the end of each—though the Julian will have contained on the whole, in one of these cases, 27 periods of 24 hours more than the corresponding equable one, and 34 more in the other—the head of the next Natural Period in each of the former will be one term in the order of *feriæ*, nearer to the head of the next Equable than that of a simple Julian succession of its kind under the same circumstances would have been: and it must be true

Section IX.—*On the Verification of the Hebdomadal Time of the Fasti.*

To illustrate and confirm the entire system of Time, represented in the Fasti Catholici, (the Noctidiurnal, the Hebdomadal, the Menstrual, and the Annual,) both in the *theory* and in the *praxis*, both in the *principles* and in the *details*, by every description of proof available for that purpose—whether as derived from the constitutions and appointments of nature, i. e. the laws of those cycles themselves, or from the modes and varieties of the civil calendar, founded ultimately on these constitutions of nature also, or from the history of opinions, institutions, and customs, connected in their origin in particular instances, and ever after associated in practice, with corrections of the Primitive Calendar, in every age, and every quarter, and among every people of the ancient world—*This* we say is the professed object, and as far as we may have succeeded, or may still succeed, in attaining it, the practical result, of these Origines Kalendariæ from first to last. To enumerate consequently the different proofs of this kind, which our inquiries have already brought to light, would be to epitomize the work itself, as far as it has yet proceeded. If then we refer to this question at all on the present occasion, it shall be only as bearing on one of these Principal Divisions of our system, the Noctidiurnal and Hebdomadal Cycle of the Fasti; and with a view to enumerate in brief, (what has never yet been done,) some of the links of that chain of proof, derived from the evidence of the matter of fact, by which the truth and certainty of this one of our cycles in particular is attested and verified throughout.

i. The true cycle of leap-year of the present system of things being that which took its rise, not in the year of the Mosaic Creation, (B. C. 4004,) but in the year before it,

to say 26 terms in one of these cases, and 33 in the other, in the order of the equable notation, will now recover the first day of the next Natural Period from the first day or Thoth of the next Equable one, where 27 or 34 would otherwise have been requisite to the same effect. And an epact of five days in each of these cases, will now recover the *feria* of ingress of the next Natural Period from the *feria* of ingress of the next Equable one, where an epact of six would otherwise have been necessary.

(B. C. 4005 [e],) yet the true Solar cycle of the system notwithstanding being that which took its rise, not in the first year of the cycle of Leap-year of the system, (the year before the Mosaic Creation,) but in the second, (the year of the Mosaic Creation itself.) B. C. 4004 [e]—it follows from this distinction that the true Noctidiurnal cycle of the system must be that which entered its proper cycle of Leap year, March 1 at midnight, according to the Julian rule of reckoning, April 25 at midnight, according to that of our Tables, B. C. 4005, and its proper Solar cycle March 1 at midnight, or April 25 at midnight, B. C. 4004, and has never ceased, from that time to the present, to proceed in each according to the distinction thus established between them from the first. And this particular cycle, it has been seen [e], is that of our Tables.

ii. The true Hebdomadal cycle of the present system of things, in like manner, being that which took its rise on the *feria prima* of the Mosaic Heptaëmeron, on the first day of the mean Natural year, the primary mean vernal equinox for the meridian of the ancient Jerusalem, on the first day of the civil year, the first of the equable Thoth, and on the proleptical Julian April 25, A. M. 1, Æra Cyc. 1, B. C. 4004, all at once, and all at midnight—this too, as it has been shewn [f], is the Hebdomadal cycle of our Tables, and that of our Tables only, from the first.

iii. Having set out from this epoch of the true *Natale* of the present world, (the first mean vernal equinox for the primary meridian, A. M. 1,) on the true first of Thoth in the equable style, Æra Cyc. 1, on the proleptical Julian April 25, B. C. 4004, and on the true *feria prima* of the first cycle of seven days in the true Noctidiurnal cycle of the present system of things, all at midnight—the course and succession of Hebdomadal time, as traced and represented in our Tables, from these several epochs, according to one and the same law perpetually, is confirmed by the chronology of the year of the Deluge, Æra Cyc. 1658–1659, B. C. 2348–2347—according to which the 264th day of that year, (reckoned from the 17th of the second month, Phaophi 17 in the equable style,

[e] Fasti Catholici, ii. 35–58. Introduction, &c. 148–150. 171. 178. Preliminary Address of the Origg. Kal. Ital. ci–cvii.

[f] Cf. the F. Cath. i. 452–500: 617–649. Introduction, &c. 132–137. Preliminary Address, lxxxviii–xc.

May 5 in the Julian, and in both from 6 A. M. mean time,) Epiphi 10 in the equable style, January 23 in the Julian--the 271st, Epiphi 17 in the equable, January 30 in the Julian--the 278th, Epiphi 24 in the equable, February 6 in the Julian—and the 285th, Mesore 1 in the equable, February 13 in the Julian, by the testimony of Scripture are implied to have been each of them the *feria septima*, and by the Hebdomadal cycle of our Tables are shewn to have actually been so [g].

iv. The Hebdomadal time of our Tables, traced forward perpetually according to the same law as at first, from the year of the Deluge to the year of the Exodus, is confirmed and placed out of question at the proper point of time by the most important epoch in the decursus of the Hebdomadal cycle, next to that of its origination, which could be adduced as the test of its truth, the date of the first of the Levitical sabbaths, in contradistinction to the first of the Patriarchal; the 38th day from the Exodus, Zif 22 in the style of the calendar, as corrected just before the Exodus, Pachon 10 in the equable style, Æra Cyc. 2446, May 17 in the Julian, A. M. 2445, B. C. 1560—the seventh day of the dispensation of Manna, and the 38th from the day of the Exodus, in all these cases alike [h].

i. *Calculation of the Hebdomadal character of May* 17, *B. C.* 1560, *from that of April* 25, *B. C.* 4004.

	Days.
i. April 25, B. C. 4004, to April 25, B. C. 4001 (3 years)	1,096
ii. April 25, B. C. 4001, to April 25, B. C. 1560 (2441 years)	891,575
iii. April 25, B. C. 1560, to May 17	22
iv. April 25, B. C. 4004, to May 17, B. C. 1560	892,693
Corrections of the calendar, or Leap-days omitted, Period i–xx.	– 19
	892,674
	= 127,524 × 7 + 6.

ii. *Calculation of the Hebdomadal character of Pachon* 10, *Æra Cyc.* 2446, *from that of Thoth* 1, *Æra Cyc.* 1.

	Days.
i. Thoth 1, Æra Cyc. 1, to Thoth 1, Æra Cyc. 2446 (2445 equable years)	892,425
ii. Thoth 1, Æra Cyc. 2446, to Pachon 10	249
iii. Thoth 1, Æra Cyc. 1, to Pachon 10, Æra Cyc. 2446	892,674
	= 127,524 × 7 + 6.

[g] Fasti Cath. ii. 166–173. [h] Ibid. ii. 228–235.

It thus appears that in both the Julian and the Equable time of the Tables, the sum of Noctidiurnal cycles from the first day of the Mosaic Heptaëmeron to the seventh day of the dispensation of Manna, the first of the Legal or Levitical sabbaths, was 892,674, and the sum of Hebdomadal cycles was 127,524, with an epact of six days of one more. It follows that, the *feria* of the first of these cycles having been the *feria prima*, that of the last must have been the *feria* 1 + 6 or 7[a]: and the proper Julian style of the former having been April 25, B. C. 4004, and that of the latter May 17, B.C. 1560—May 17 must have been as truly the *feria septima* B. C. 1560, as April 25 the *feria prima* B. C. 4004[i] *.

v. The Hebdomadal cycle of our Tables is confirmed by the epoch of the first Nundinal cycle of Italian antiquity, taken directly from it, July 19, B. C. 1340, the *feria prima* of the first Nundinal cycle, the *feria septima* of the Hebdomadal (of our Tables,) for the time being. It is confirmed in a particular manner by the date and character of the *fourth* in the general succession of Nundinal Types, April 23, B. C. 980, the *feria prima* of the Nundinal cycle, the *feria tertia* of the Hebdomadal; and by those of the *fifth*, March 25, B. C. 860, the *feria prima* of the Nundinal, the *feria quarta* of the Hebdomadal. It is attested and verified by the decursus of both these cycles, (the Nundinal in its proper calendar, the Hebdomadal in that of our Tables,) as traced in our Origines Kalendariæ Italicæ in conjunction, from July 19, B. C. 1340, when they both set out together on the *feria septima* of the Hebdomadal cycle, through a period of 1694 years, down to Jan. 1, A. D. 355, when they both met together on the *feria prima* of the same cycle[k].

vi. No one requires to be told that the succession of the courses of the Priests, under the first and second Temple respectively, and that of the Hebdomadal cycle, were the

* It hence appears that, in the general succession of the Hebdomadal cycle down to this time, the first week in the reckoning of the Legal or Levitical sabbath, the first seven days of the dispensation of Manna, Pachon 4 to 10 in the Equable style, Æra Cyc. 2446, May 11–17 in the Julian, B. C. 1560, numerically was the 127,525th. See our Prolegomena ad Harmoniam Evangelicam, cap. i. p. 37.

[i] See our Fasti Cath. ii. 228–235. 204: ii. 1–132: 341–373: 530–537:
[k] Cf. the Origg. Kal. Ital. i. 133–161: 442: 558: 670–710.

same thing; every course of the Priests, in the regular order of the Levitical service, having gone in, and gone out, at noon on the sabbath day [l]. And this being the case, no better test of the Hebdomadal cycle of our Tables and of its accordance with the matter of fact throughout, than this succession is calculated to supply, could be proposed.

Now to draw out and exemplify this particular proof of its truth with the necessary minuteness of detail was part of the business of one of our former works [m]; in which we traced the succession in question through a period of 1073 years, from the dedication of the first temple B. C. 1004, to the destruction of the second A. D. 70, without finding the actual succession of courses as attested by contemporary evidence, at variance in a single instance with that of weeks, as shewn by the Hebdomadal cycle of our Tables [n]. And though it may be objected to this argument that, as the basis of the comparison in question, it assumes the truth of the calendar first proposed in our Prolegomena [o], as the actual one by which the Levitical service was regulated for the whole of this interval; we have produced such proofs, both in the first Part of these Origines [p], and in this third Part, where we treat of the Calendar of Josephus [q], of the actual existence of a sacred calendar among the Jews, altogether the same with that of our Prolegomena, that necessary and indispensable as the admission of this assumption may be, to the argument founded on the comparison in question, there can be no reasonable doubt of its truth.

vii. The Hebdomadal cycle of our Tables is illustrated also and confirmed by the Hindu tradition, relative to the birthday of the goddess Srī, (the impersonation of the lunar calendar among the Hindoos) the 30th Aswina, October 24, B. C. 946; and the Hebdomadal character of this day of her birth, the *feria quinta*, which, on that account, in the cycle of the Hindoos, obtained, and still retains, the name of Lakshmiwar, or Srīs day. This coincidence, that B. C. 946, October 24,

[l] Cf. our Origg. Kal. Ital. iv. 296 *n.*

[m] Prolegomena ad Harmoniam Evangelicam, sive de Primariis nonnullis, ad Chronologiam Evangelicam spectantibus, Dissertationes quatuor. Oxonii, e Typographeo Academico, MDCCCXL.

[n] Cf. Prolegomena ad Harmoniam, Caput ii. p. 84 sqq: Origg. Kal. Italicæ, iv. 294–305.

[o] Caput i. pag. 1–84 and pag. i–xcii.

[p] Fasti Cath. ii. 528–543: 550–559.

[q] Vol. iii. 449 sqq. Diss. x. Pt. ii. chap ii.

the date of the lunar correction of the Hindoos, was the *feria quinta*, holds good by the Hebdomadal cycle of our Tables, but by no other which can be substituted for it [q]. In like manner it is confirmed by the Chinese cycle of 28 days, founded originally on the Hebdomadal cycle of seven days, and introduced into their calendar B. C. 658; but neither at that time, nor ever since, any thing *de facto*, except the cycle of our own Fasti, four times repeated, perpetually [r].

viii. The Hebdomadal cycle of our Tables is attested also by another interesting event in the history of the cycle itself, the imposition of Planetary names on the different *feriæ* of the cycle; a change in its original style, (which was simply that of number and order,) though made so long ago, retained to the present day. It has been shewn in the first Part of this work [s] that this change was made in Egypt, along with the introduction of many other ideas and doctrines, before unknown to the Egyptians, and ultimately derived from the Chaldeans; those of the *Genitura Mundi*, the *Planetary Houses*, the *Decania of the Sphere*, and the alternate *Recession* and *Precession* of the Cardinal points [t]. It has been shewn too that the Chaldaic date of the *Genitura Mundi*, the xv. degree of Leonton, the Julian August 8, B. C. 798, having been assigned at that time to the planet Saturn, as the highest and most influential of the Planets, yet in his proper capacity of the Lord and Regent of the seventh day, this is decisive that B. C. 798, in the true order of the hebdomadal cycle, August 8 must have been the *feria septima*; as it was at that very time by the cycle of our Tables, but not by any other which could be substituted for it at present.

ix. For three most important Periods in our Tables, the xxxiind, the xxxiiird, and the xxxivth, B. C. 140–A. D. 225, comprehending the whole of the early Christian history in the Gospels, the Acts, and the Epistles, the Acta of Martyrs, the proceedings of Councils, the Paschal Controversies and Paschal cycles of early Christian antiquity, and the later books of the War and the Antiquities of Josephus—the Heb-

[q] Cf. the Fasti Cath. iv. 35. [r] Cf. ibid. iv. 1–17. [s] F. Cath. iii. 489 sqq. cf. i. 413 sqq. [t] Cf. F. Cath. i. 413: iii. 489: 447 sqq: 483 sqq.

domadal cycle of the Fasti has been verified in the second Part of these Origines[v], by every testimony, direct or indirect, which could be derived from these various sources; and it will be further verified, not only for the first two of these Periods, but from a much earlier date, in this third Part, where we shall have occasion to treat seriatim of the Calendar of Josephus[w].

x. After the ingress of the xxxvth Period, A.M. 4229, A.D. 225, the Hebdomadal cycle of the Tables, and the common cycle of that denomination, which chronologers are accustomed to carry back with them, to any distance of time from the present day, in the form of the solar cycle, begin to be the same, or to differ from that time forward only as the Gregorian does from the Julian. And yet, as no change in the administration of this part of our system from the first takes place at the ingress of this Period—as the Hebdomadal cycle of this Period takes up that of the one before it, as the cycle of that too did the cycle of the preceding—it would be difficult to say, why the same thing in itself, and continuing to go on in the same way, should now begin to differ so much from what it was before, as to be absolutely true and certain from this time forward, yet doubtful and precarious all along until then[x].

As however the ingress of this Period is the terminator of the Controversial Division of our Tables, so far at least as concerns this cycle in particular, it may be worth while to verify the entire course of the Hebdomadal time of our Fasti, through this Division, and also through the next, to the end of our Tables, by the same kind of proof, a specimen of which we gave under Article iv. supra[y].

v Origg. Kal. Ital. iv. 284–308. w Vol. iii. 449 sqq. x See Introduction to the Tables of the Fasti, Part ii. ch. iv. sect. ix. 166–170. y Page lxi.

i. Calculation of the decursus of the Noctidiurnal time of the Fasti Catholici in the Hebdomadal, from the ingress of Period i, April 25, B. C. 4004, to the ingress of Period xxxv, April 25, A. D. 225.

	Days.	h.
i. From April 25, B. C. 4004, to April 25, B. C. 4001 (3 years)	1,096	
ii. From April 25, B. C. 4001, to April 25 A. D. 225 (4225 y.)	1,543,181	6
iii. From April 25, B. C. 4004, to April 25, A. D. 225, in simple Julian time	1,544,277	6
Corrections of the Calendar	− 34	
In the Julian time of the Tables	1,544,243	
	=220,606 × 7 + 1	

Consequently April 25, B. C. 4004, having been the *feria prima*, April 25, A. D. 225 must have been the *feria secunda*, as it is seen from our Tables (Dom. Lett. B) to have been.

ii. Calculation of the decursus of the Noctidiurnal time of the Fasti in the Hebdomadal, from the ingress of Period xxxv, April 25, A. D. 225, to the ingress of Period xlvii, April 25, A. D. 1793.

	Days.
i. From April 25, A. D. 225, to April 25, A. D. 1793, (1568 y.) in simple Julian time and the Julian of the Tables	572,712
	=81,816 × 7

Consequently April 25, A. D. 225, having been the *feria secunda*, April 25, A. D. 1793 must have been the *feria secunda* also; as it is shewn by the Hebdomadal cycle of the Tables (Dom. Lett. B) to have been*.

* This year, A. D. 225, being so important an epoch in our Tables, it is worth while to observe how nearly the sum of mean annual tropical time of our standard, and the corresponding sum of the mean Julian time of our Tables, from Period i, A. M. 1, B. C. 4004, to Period xxxv, A. M. 4229, A. D. 225, approach at this time to an absolute equality; as may thus be shewn:

i. From A. M. 1 to A. M. 4229, in mean tropical time, we have, (Introduction, Table xxx. p. lxxx.)

	d.	h.	m.	s.
4000 mean tropical years	1,460,969	0	0	0
200	73,048	10	48	0
20	7,304	20	16	48
8	2,921	22	30	43·2
4228	1,544,244	5	35	31·2

xi. Lastly, in the simple Equable succession of the Noctidiurnal cycle of the Tables, nothing is easier, nor yet more certain, than the verification of the Hebdomadal cycle of our Fasti, either backwards or forwards, perpetually, by merely reading the Thoth of the equable year, in the style of the Hebdomadal cycle, either backwards or forwards, from year to year, after the manner explained in the Introduction to the Tables[z], or in the Preliminary Address of the Origines Kal. Italicæ[a]. Nor can we perhaps better conclude this summary review of the proofs, by which this particular cycle is confirmed from first to last, than by exhibiting the equation of the Noctidiurnal and Hebdomadal time of our Tables, as carried on through all our Julian Periods, to the same thing as carried on through all our Equable ones.

The sum total of Periods of each kind is xlviii. The sum of Annual Julian time comprehended in these xlviii Julian Periods, from B. C. 4004 to A. D. 2000, is 6003. The sum of Equable Annual in the xlviii Equable Periods, Æra cyc. 1 to Æra cyc. 6008, is 6007.

i. *Calculation of the sum of Noctidiurnal and Hebdomadal time in the Julian Annual time of the Fasti, from April* 25 (*old style*), *the Feria Prima at midnight, B. C.* 4004, *to May* 1 (*new style*), *A. D.* 2000.

	Days.
i. From April 25, B. C. 4004, to April 25, B. C. 4001, (3 years)	1,096
ii. From April 25, B.C. 4001, to April 25, A.D. 2000, (6000 y.)	2,191,500
iii. From April 25, B.C. 4004, to April 25, A.D. 2000, (6003 y.)	2,192,596
Corrections, from Period i to Period xxxv	−34
iv. In the Julian time of the Tables, from April 25, B. C. 4004, at midnight, to April 25, A.D. 2000, at midnight, old style, May 8, new style	2,192,562
	−7
v. From April 25, old style, B.C. 4004, to May 1, new style, A. D. 2000	2,192,555
	= 313,222 × 7 + 1

ii. In mean Julian time, from April 25 at midnight, B.C. 4004, to April 25 at midnight, A. D. 225, p. lxvi, we had

	d.	h.	m.	s.
	1,544,277	6	0	0
Subtract	−33			
4228 Julian years of the Fasti	1,544,244	6	0	0
4228 tropical years of the Fasti ..	1,544,244	5	35	31·2
Difference in 4228 years of either kind		0	24	28·8

z Pag. 136 sqq. a Pag. lxxxix.

Consequently, April 25, old style, B. C. 4004, having been the *feria prima*. May 1, new style, A. D. 2000, must be the *feria secunda*: as it is shewn to be by the Gregorian cycle of our Tables, A. D. 2000, Dom. Lett. B A.

ii. ***Calculation of the sum of Noctidiurnal and Hebdomadal time in the Equable Annual time of the Fasti, from Thoth* 1, *Æra Cyc.* 1, *to Thoth* 1, *Æra Cyc.* 6008.**

i. From Thoth 1, Æra Cyc. 1, at midnight, to Thoth 1, Æra Cyc. 6008, at midnight, 6007×365 days .. = 2,192,555
$= 313{,}222 \times 7 + 1$

Consequently, Thoth 1, Æra cyc 1, having been the feria 1a, Thoth 1, Æra cyc. 6008, must be the feria 2a, as it is shewn by our Tables that year to be; its Julian style also, the same year, as appears from our Tables, being May 1, A. D. 2000,—of which the same thing has just been proved.

Section X.—*On the difference in the Administration of the Tables of the Fasti, before and after Period xxxv, A. D.* 225, *respectively.*

That there is a difference in the rule of the administration of our Tables from the ingress of Period i, B. C. 4004, to that of Period xxxv, A. D. 225, and from the ingress of this Period to the end, respectively, as a matter of fact cannot be denied. And yet that this difference consists principally, if not exclusively, in *one* circumstance, viz. that, from the ingress of Period i to that of Period xxxv, the Natural-Annual time of the Tables descends two terms, from Period to Period, in the order of the Noctidiurnal cycle, and two in that of the Hebdomadal—and after the ingress of Period xxxv descends only one term in each—is equally undeniable. In other respects there is no difference in the rule of the Tables before and after A. D. 225, or none but what is simply the consequence of this. The Julian style of the Natural-Annual time of the Tables recedes one term, from Period to Period, in the order of the Julian notation, after A. D. 225; and it did the same before. The proportion of the Natural-Annual time of the Tables, in the sense of the Tropical, to the true annual in the sense of the Sidereal, is the same after A. D. 225 as before. The Julian style of the annual Julian time of the Tables, in contradistinction to the Natural, remains the same, from Period to Period, in terms of the Julian notation, after A. D. 225, as it did before. In short, the real difference between the two great Divisions of our Tables, from Period i to xxxv, and from Period xxxv to the end, as we have already observed, consists in this *one* circumstance, that through the first of these Divisions, mean Natural-Annual time, considered and treated *pro tempore* as mean Julian, descends from Period to Period one term in the order of the Julian notation, and two terms in the order of the Hebdomadal cycle, and through the second, descends one term in each alike.

Such being the case, the first question which presents itself, in order to the ultimate discovery of the reason of *this* distinction, is, Whether anything ceases to take place in the administration of the Noctidiurnal, the Hebdomadal, and the Annual, time of our Tables, under the proper Julian style of each, at the ingress of Period xxxv, which had always taken place, under the same circumstances, at corresponding points of time, before? In answer to which, the mere inspection of the Tables will shew that nothing ceases to take place in the decursus of the time of the Tables, in all and singular its component parts, at the egress of Period xxxiv and the ingress of Period xxxv, which had ordinarily taken place at the egress and ingress of consecutive Periods until then before. The Julian style of the mean annual natural time of the Tables, at the ingress of this Period, drops one term in the order of the Julian notation, from March 24 to March 23, and two terms in that of Hebdomadal, from the *feria* 6ª to the *feria* 4ª, just as it had always done, under the same circumstances, before. The Julian style of the annual Julian time of the Tables, at the ingress of this Period, remains the same as at the ingress of every one before it, April 25 or April 24; and its Hebdomadal style drops one term at the ingress of this Period, and no more, just as at the ingress of every one before it. And, as the conventional index of this change of the relation of the same Julian term, in the same year of the cycle of leap-year, and in the same year of the solar cycle, to the decursus of Noctidiurnal and Hebdomadal time, (both, in themselves, remaining the same, and going on in the same way as before,) at the ingress of this Period also, the Dominical letter of the Solar cycle of the Tables is advanced from A to B, just as, *mutatis mutandis,* under similar circumstances it had always been before.

It is manifest therefore that nothing is omitted at this period in the decursus of the Tables, which had always been done under similar circumstances before; and that nothing, which had ordinarily been done at such points of time, in a certain way, and to such and such an effect before, is done in a different way, or to a different effect at this. And yet this point of time, the egress of Period xxxiv from the Tables and the ingress of Period xxxv into them, was the date of an actual, a real, and permanent change in the relation of the Natural-Annual, and the Julian-Annual, time of the Tables to the Noctidiurnal and the Hebdomadal; a change which begins to appear in the administration of all of them in conjunction from this time forward, though not before. To what then could this be due except the fact that, over and above what had always taken place at the egress of one Period and the ingress of another before, affecting the decursus of all these forms of time both separately and conjointly until then, something must have taken place at the egress of the xxxivth Period and the ingress of the xxxvth in particular, which had never taken place under the same circumstances before? and something calculated to affect the relation of Annual to Noctidiurnal and Hebdomadal time, under the proper Julian style of each alike, in a manner in which it had never been affected before?

In answer to this question too, we must again remind the reader of the very remarkable fact, to which we have often had occasion to bespeak his attention before[b]; how, by virtue of a number of extraordinary coincidences, (the concurrence of all which in this one result at last could be resolvable into nothing but the special Providence of God,) just at this moment of the egress of Period xxxiv out of our Tables, and the ingress of Period xxxv into them, there was no difference, except a nominal one, between the proper Julian time of our Fasti, as brought down until then from

[b] Fasti Cath. i. 525–528: Introduction, 159: Origg. Kal. Ital. iv. 273–283: Preliminary Address, xxvi–xxxiv.

the beginning of things, and the proper Julian time of the Correction of the Dictator Cæsar, as brought down also, by the mode of its actual administration in the Roman Calendar, from the Kalends of Januarius, or the Kalends of Martius, U. C. 709, B. C. 45, to the Kalends of Martius U. C. 977, A. D. 224, or the Kalends of Januarius U. C. 978, A. D. 225. The Kalends of Martius U. C. 977, both in themselves, and in relation to everything else, were absolutely the same with the first of March in the first year of our xxxvth Julian Type, A. D. 224; and the Kalends of Januarius U. C. 978 with the first of January, in the same year, A. D. 225. It follows, that just at this moment, (whether March 1, A. D. 224, or January 1, A. D. 225,) the xxxvth Julian Type of the Fasti was absolutely commensurable, absolutely coincident, absolutely identical, in every respect but the style of each, with the corresponding Type of the Julian Correction of Cæsar, such as it was in the 270th year of its decursus, whether dated from the Kalends of Martius, U. C. 977, or from the Kalends of Januarius, U. C. 978.

It follows consequently that, just at the egress of Period xxxiv, besides the xxxvth Positive or Conventional Type of annual Julian time, of which we had made use all along, which was ready to enter our Tables—another was ready to do so too—Julian of its kind, as much as that of our Tables, and at this point of time, in everything but the proper style of each, identical with that of our Tables—which, as an *actual* one of its kind, and at this time standing precisely in the same relation to the true course and succession of Noctidiurnal, Hebdomadal, and Annual time, brought down in conjunction from the first until then, as the xxxvth Type of our Tables, must not only have been ready at this time to enter our Tables, but must really at this time have entered them, in the form of the xxxvth Julian Type of the Tables itself. And having once got admission into our Tables in this form of an absolute equality to, and identity with, the xxxvth Type of the Tables—as an actual one of its kind, and actually retaining and wearing this form unchanged ever after, it never could cease to retain possession of them.

It follows from this state of the case, which began to be matter of fact either on March 1, A. D. 224, or January 1,

A. D. 225. that, while the succession of the Julian Periods and Julian Types of our Tables goes on after the ingress of Period xxxv just as it did before, the Julian Correction of the Dictator Cæsar in the form of this xxxvth Type goes along with them also; and the proper Julian Types of our Tables, continuing the same in themselves after A. D. 225 as before, yet from A. D. 225 forward proceeding *pari passu* and in conjunction with a fixed and invariable Type of proper Julian annual time, in relation to this assume the form of Gregorian in comparison of Julian, just as much as the Gregorian of the present day in comparison of this simple Julian Type of the present day also—with this difference only, that the Julian time of our Tables became Gregorian in this relation at the ingress of Period xxxvi, A. D. 365—the simple Julian of the present day became so at the date of the Gregorian correction A. D. 1582 [c].

Now we have often had occasion to observe, (and it cannot be too frequently impressed on the reader,) that the civil year of any denomination, and of any length whatsoever, is only a certain complex of Noctidiurnal cycles, recurring in a certain order perpetually; and that the Julian year, as merely a particular form of the civil reckoning of annual time, is no exception to this general law. The Julian year is simply a complex of 365 noctidiurnal cycles, alternating after a certain order with one of 366. In like manner, the style of the civil calendar anywhere is merely the conventional mode, adopted in that instance, to distinguish the cycles of day and night, which make up one such complex, in their proper place and order in the general succession, one from another respectively. Every civil year requires a style of this kind, and every civil year has one of its own. The Julian style is the proper name and order of each of these cycles, in that sum or complex of so many together at a time, as make up the Julian year. The Julian style calls the first of this number January 1, and the last December 31. The Attic would call the former Gamelion 1, and the latter Posideon 31.

It is clear from these explanations that, as the civil year

[c] Cf. Fasti Cath. i. 119. 125. 525–528: Introduction, 159–170: Preliminary Address to the Origg. Kal. Ital. xliv.

itself is only the positive reckoning of such and such a number of Noctidiurnal cycles, and in such and such an order perpetually, so the style of the civil calendar is nothing but the conventional mode of distinguishing one of these cycles, in its proper place and order, from another. The civil calendar has different names, in different instances, for the parts of which it is everywhere composed; but they are all everywhere positive of their kind, and all everywhere intended for, and instrumental to, the same use and purpose, of discriminating one of the constituent parts of the same complex or total from another.

It follows, that Natural-Annual time too, considered and treated *pro tempore* as civil, must be regarded and treated as a certain complex of Noctidiurnal cycles, the same in itself, and made up of parts recurring in the same order, perpetually; and consequently, for the sake of expressing and distinguishing each of these in the common order of succession, Natural-Annual time too must have its exponents, its nomenclature, its style. And if the state of the case be such that Natural-Annual time can be considered referrible as yet to nothing but itself, and to the general law of the decursus of Natural-Annual time relatively to that of Noctidiurnal and Hebdomadal, it may select its own style for its own cycle of day and night, and its own cycle of *feriæ*. It may devise such a style for its own use, or it may adopt the style of any known civil calendar, like the Julian; and it may use a Julian style, if it thinks proper, which, while always the same with the Julian in general, may not always be the same with it in particular.

But if the state of the case be such that Natural-Annual time, regarded and treated *pro tempore* as civil, and Julian Annual time, which can never be regarded and treated as anything but civil, must be supposed to be going on together, and the Noctidiurnal and the Hebdomadal cycle all the time to be running alike through both, yet deriving the distinctions of style and name, by which the order and place of their parts are discriminated asunder perpetually, from the Julian Calendar; it is manifest that, under this change of circumstances, Natural-Annual time, though as much in want of some style and nomenclature for its own proper use and purpose as before, is no longer at liberty to select or devise one for itself. It must adopt and make use of that by which the Noctidiurnal and the Hebdomadal cycle is regulated, and that by hypothesis is the Julian. It is not free even to use a modified form of the Julian. It must adopt, unchanged and unmodified, that which is actually in use; and this by hypothesis is the simple Julian.

Now this was in reality the state of the case in the relations of Annual time to Noctidiurnal and Hebdomadal, before and after A. D. 225 respectively. Before A. D. 225, Annual time, in the sense of Natural or Tropical, relatively to Noctidiurnal and Hebdomadal, had no standard of reference but itself; that is, the relation of Annual time to Noctidiurnal and Hebdomadal, before A. D. 225, varied from Period to Period, in proportion as Natural-Annual time, by virtue of the law of Precession from the first, varied from itself or descended upon itself—i. e. at the rate of two terms in the Noctidiurnal cycle, two *feriæ* in the Hebdomadal, below the epoch of origination in both. And while this state of things continued, the Noctidiurnal and the Hebdomadal cycle, though always the same with themselves, and proceeding according to their proper law perpetually, yet as entering the Annual succession and making part of the Annual perpetually also, must have borrowed the proper style and nomenclature even of their proper parts from those of the corresponding parts of the Annual. Under such circumstances, the style of Noctidiurnal and Hebdomadal could no more be continuous from Period to Period than that of Annual. There must be interruptions in it from Period to Period, in proportion to that of the continuity of Annual in Noctidiurnal and Hebdomadal time, from Period to Period also.

It is evident too that, under such circumstances, the style of the Annual succession for its component parts must have given the law to that of the Noctidiurnal or the Hebdomadal for theirs. No cycle in the former, or *feria* in the latter, could have a name, in its own succession, except as derived from its place in the Annual also. It is evident likewise that the Noctidiurnal and Hebdomadal style of the parts of one Natural-Annual Period must have been independent of that of those of another. This style in one Period might resemble that in another, and might even appear to continue that of another. But that of one could never have been absolutely continuous on that of another. The continuity of the style of the Period must have been limited to its own Period.

After A. D. 225 however, when the proper Julian Type of Annual time in the form of civil permanently entered the general succession of such Types from the first, and the proper Julian style permanently got possession of the Noctidiurnal cycle, and through that of the Hebdomadal, this state of the case was reversed. From that time forward the proper style of the Noctidiurnal cycle in civil annual time, in the sense of Julian, must have begun to prescribe the style of the same cycle in Natural-Annual, even as distinct from civil. Natural-Annual time and civil-annual time having entered the Tables at once on the first day of the *civil* year, under the Julian style of March 23, and under the Hebdomadal style of the *feria* 4a alike, A. M. 4229, A. D. 225, from that time forward even Natural-Annual time must borrow the style of its proper Noctidiurnal and Hebdomadal time from that of the Julian. Not a single day and night could now make part of the former, which did not at the same time make part of the latter, under a name derived from its proper place in the Julian calendar. Henceforward Noctidiurnal time as a part of Annual must be first and properly part of Annual-Julian, secondarily and through that, part of Annual-Natural; and the proper style of the Noctidiurnal succession even in the Annual, in the sense of the Natural, henceforward must be that of the Julian calendar.

Section XI.—*On the comparison of the decursus of Noctidiurnal Time, under the Julian style of the Tables, in the Hebdomadal Cycle of the Fasti, with that of the same in the Nundinal Cycle of Italian and Roman antiquity.*

The course and succession of the Nundinal day, under its proper Julian style perpetually, has been so continuously traced both in the Nundinal calendar of ancient Italy in general, and, from the Correction of Numa downwards, in the Roman Calendar in particular, and so completely verified, at different points of the intermediate period, by means of contemporary testimony, that, among the conclusions established in the two preceding Parts of the present work, none could now be more implicitly taken for granted than *this:* That both the proper Nundinal character, and the proper Julian style, of any day between July 19, B. C. 1340, or the Nones of Januarius, U. C. 42, February 21, B. C. 712, down to the Kalends of Januarius, U. C. 1108, January 1, A. D. 355, as a matter of fact, may be known with certainty from our General Tables of the Nundinal Calendar [d], or our particular Tables of the Roman Calendar [e].

And this being the case, as no two measures of the Noctidiurnal cycle by such and such a number of repetitions of itself, in the same order *inter se,* perpetually, could approach more nearly to identity than the Hebdomadal cycle of Patriarchal antiquity, and the Nundinal cycle of Italian and Roman antiquity; and as in the nature of things the decursus of Noctidiurnal time, under any assumed style, through a cycle of seven terms, must be analogous to that of the same under similar circumstances in a cycle of eight—the reader will probably agree with us that, in order to put the distinctions in the administration of the Julian-Annual time of our Tables, in Noctidiurnal and Hebdomadal, before and after A. D. 225, which we have been endeavouring to explain, to the test of matter of fact, the most likely means will be to trace the course and succession of a given Julian term, between B. C. 1340 and A. D. 355, under the same or similar circumstances, both in the Hebdomadal cycle of the Fasti, and in the Nundinal cycle of classical antiquity.

With a view to this comparison therefore, we have compiled the three following Tables.

i. Table A, shewing the decursus or march of a given Julian term, December 30, in the Julian style and the Julian Period and the Hebdomadal Cycle of the Fasti, from B. C. 1261 to A. D. 364.

ii. Table B, shewing the decursus or march of the same Julian term, December 30, in the Julian style and Julian Period of the Fasti, but in the ancient Nundinal Cycle, from B. C. 1261 to A. D. 364 also.

[d] Origines Kal. Italicæ, ii. 670–710. [e] Ibid. iv. Appendix xxxii–cxli.

iii. Table C, shewing the decursus or march of the same Julian term, December 30, in the Nundinal Cycle, not in the Julian Period of the Fasti, but in the Nundinal and Julian Period of 128 years, from B. C. 1241 to A. D. 360.

TABLE A.

March of a given Julian date, December 30, in the Julian style and the Julian Period and the Hebdomadal Cycle of the Fasti, from B. C. 1261–1260 to A. D. 364.

	Length.	Epact.	B. C.	Epoch.	Feria.	Dom. Lett.
Period i	140	6	1261–1260	Dec. 30	3	E
ii	140	6	1121–1120	30	2	F
iii	112	6	981–980	30	1	G
iv	140	6	869–868	30	7	A
v	56	6	729–728	30	6	B
vi	140	6	673–672	30	5	C
vii	112	6	533–532	30	4	D
viii	140	6	421–420	30	3	E
ix	140	6	281–280	30	2	F
x	112	6	141–140	30	1	G
xi	140	6	29–28	30	7	A
			A. D.			
xii	112	6	112–113	30	6	B
xiii	140	6	224–225	30	5	C
xiv	140	6	364–365	Dec. 30	5	DC

TABLE B.

March of a given Julian date, December 30, in the Julian style and the Julian Period of the Fasti, and in the ancient Nundinal Cycle, from B.C. 1261–1260 to A.D. 364.

	Length.	Epact.	B. C.	Epoch.	Feria.
Period i	140	6	1261–1260	Dec. 30	3
ii	140	6	1121–1120	30	1
iii	112	3	981–980	30	7
iv	140	6	869–868	30	2
v	56	5	729–728	30	8
vi	140	6	673–672	Dec. 29	5
vii	112	3	533–532	28	3
viii	140	6	421–420	27	6
ix	140	6	281–280	26	4
x	112	3	141–140	25	2
xi	140	6	29–28	24	5
			A. D.		
xii	112	3	112–113	23	3
xiii	140	7	224–225	22 = 23	6
xiv	140	7	364–365	23	*5

TABLE C.

March of a given Julian date, December 30, in the Nundinal Period of 128 *years, and the Nundinal Cycle, from B. C.* 1241–1240 *to A. D.* 360.

	Length.	Epact.	B. C.	Epoch.	Feria.	Epoch.	Feria.
Period i	128	7	1241–1240	Dec. 30	4		
ii	128	7	1113–1112	30	3		
iii	128	7	985–984	30	2		
iv	128	7	857–856	30	1		
v	64	7	729–728	30	8		
vi	128	7	665–664	Dec. 29	7	Dec. 30	8
vii	128	7	537–536	28	6	30	8
viii	128	7	409–408	27	5	30	8
ix	128	7	281–280	26	4	30	8
x	128	7	153–152	25	3	30	8
xi	128	7	25–24	24	2	30	8
			A. D.				
xii	128	7	104–105	23	1	30	8
xiii	128	8	232–233	22 = 23	8	30	8
xiv	128	8	360–361	Dec. 23	8		

The first remark which we shall make on these several Tables is *this*; That, with respect to the Julian epoch of all of them in common, it was indifferent to the proposed comparison what Julian term might have been selected; and though December 30, as coming so near to the end of one Julian year and the beginning of another, *a priori* may not appear the most convenient which we could have fixed upon, we have made choice of this in particular, as the common Julian epoch from which we proposed to trace the decursus of Noctidiurnal time in each of these successions, Hebdomadal and Nundinal, because this (Dec. 30) was the particular Julian term to which both the Kalends of Januarius in the first year of the Julian Correction, and the *feria prima* of the first Nundinal Cycle in that Correction, happened to be determined by the actual administration of the Roman Calendar, and the actual course of the Nundinal Cycle, from the Kalends of Januarius, U. C. 42, (the date of the Correction of Numa,) to the Kalends of Januarius, U. C. 709, (that of the Correction of Cæsar [f].)

The next is, that, without taking for granted at present

[f] See our Origg. Kal. Italicæ, ii. 39 sqq.: iv. 41 sqq.

the truth of the decursus of this term, December 30, in the Hebdomadal cycle of the Fasti, as represented in Table A, we may nevertheless assume its decursus in the Nundinal cycle, as represented in Table B, and Table C, as matter of fact perpetually. The decursus of a given Julian term, in its proper Nundinal style, in either of these Tables, is not an hypothetical one of its kind, but a real; confirmed all along by testimony. The Nundinal character of a given Julian term, (whether December 30, or any other,) at the ingress of every Period in each of these Tables, is a question of contemporary history, investigated and settled by means of the proper data in the second Part of this work: and each of these Tables, B and C, having been collated, and found to be consistent, throughout, both with each other, and with the general succession of the Nundinal cycle in the different Types of the Nundinal Calendar [g], and with the particular succession of the same in the Roman calendar [h] *, no further proof of their agreement with the matter of fact, and consequently of their truth, at every point of the Period embraced by them, is necessary.

* *Verification of Tables B and C by each other.*

i. Tab. B. Per. i. B. C. 1261		Dec. 30	Feria 3
	-20 $(15\times5+5\times6^{*}=105=13\times8)+1$		
Tab. C. Per. ii. B. C. 1241 †		Dec. 30	Feria 4

† B. C. 1241, a leap-day in Table B, though not in Table C.

ii. Tab. B. Per. ii. B. C. 1121		Dec. 30	Feria 1
	$-\ 8$ $(6\times5+2\times6=42)$		$+2$
Tab. C. Per. ii. B. C. 1113		Dec. 30	Feria 3
iii. Tab. C. Per. iii. B. C. 985		Dec. 30	Feria 2
	-4 $(5\times3+6=21)$		$+5$
Tab. B. Per. iii. B. C. 981		Dec. 30	Feria 7

* The meaning of this is that, as there were 15 common years, and 5 leap-years, in these 20 years, we take the sum of the Nundinal Epact in both, (5 days for every common year, 6 for every leap-year,) and casting off every complete cycle of 8 days contained in it, add the remainder to the given *feria*. If there is no remainder, we add 8. See our Origg. Kal. Italicæ, ii. 28 *n*.

g Origg. Kal. Ital. ii. 674 sqq.

h Ibid. iv. Appendix, xxxiii—cxv.

iv.	Tab. B.	Per. iv.	B. C. 869	Dec. 30	Feria 2
			− 12 (9 × 5 + 6 × 3 = 63)		+ 7
	Tab. C.	Per. iv.	B. C. 857	Dec 30	Feria 1
v.	Tab. B. Per. v. / Tab. C. Per. v.		B. C. 729	Dec. 30	Feria 8
vi.	Tab. B.	Per. vi.	B. C. 673	Dec. 29	Feria 5
			− 8 (6 × 5 + 2 × 6 = 42)		+ 2
	Tab. C.	Per. vi.	B. C. 665	Dec. 29	Feria 7
vii.	Tab. C.	Per. vii.	B. C. 537	Dec. 28	Feria 6
			− 4 (5 × 3 + 6 = 21)		+ 5
	Tab. B.	Per. vii.	B. C. 533	Dec. 28	Feria 3
viii.	Tab. B.	Per. viii.	B. C. 421	Dec. 27	Feria 6
			− 12 (9 × 5 + 6 × 3 = 63)		+ 7
	Tab. C.	Per. viii.	B. C. 409	Dec. 27	Feria 5
ix.	Tab. B. Per. ix. / Tab. C. Per. ix.		B. C. 281	Dec. 26	Feria 4
x.	Tab. C.	Per. x.	B. C. 153	Dec. 25	Feria 3
			− 12 (9 × 5 + 6 × 3 = 63)		+ 7
	Tab. B.	Per. x.	B. C. 141	Dec. 25	Feria 2
xi.	Tab. B.	Per. xi.	B. C. 29	Dec. 24	Feria 5
			− 4 (5 × 3 + 6 = 21)		+ 5
	Tab. C.	Per. xi.	B. C. 25	Dec. 24	Feria 2
xii.	Tab. C.	Per. xii.	A. D. 104	Dec. 23	Feria 1
			+ 8 (6 × 5 + 2 × 6 = 42)		2
	Tab. B.	Per. xii.	A. D. 112	Dec. 23	Feria 3
xiii.	Tab. B.	Per. xiii.	A. D. 224	Dec. 22 = 23	Feria 6
			+ 8 = 42 =		+ 2
	Tab. C.	Per. xiii.	A. D. 232	Dec. 22 = 23	Feria 8

These Tables B and C, consequently, *mutatis mutandis*, are the same, and wherever they appear to differ do so accidentally. The Julian epochs of the different Periods in each are the same, December 30 for the first five; one term less for every Period through the last eight. The Nundinal *feria* of this epoch is obtained by the same process in each, the addition of the epact at the end of the Period to the *feria* at the beginning; and if the character resulting is not the same at the ingress of each of the Periods in both Tables, it is due simply to the difference in the lengths of the Periods, and the consequent difference of the epacts, at the end, in each. In the Nundinal Period of 128 years this epact is 7, and the decrement of the *feria* of origination from Period to Period is consequently 8 − 7, or unity, perpetually. In the Period of 140 years, treated as a Nundinal one, it is 6, and the decrement on the *feria* of origination through successive Periods is 8 − 6, or 2. In the Period of 112 years it is 3, and the decrement from Period to Period is 8−3, or 5. In the Period of 56 years it is 5, and the decrement is 8−5, or 3. So that everything in Table B, if not absolutely the same in these respects as in Table C, is relatively so.

The agreement of these two Tables having thus been demonstrated, it will suffice, for the confirmation of both by their consistency with the general succession of the Nundinal Cycle in the Nundinal Calendar of the time being, or with the particular one of the same thing in the Roman Calendar, to compare either of them with our Tables of the Nundinal Calendar in general, (Origg. Kal. Ital. ii. 674,) or with our Tables of the Roman Calendar from the Correction of Numa downwards in particular: (Origg. Kal. Ital. iv. Appendix xxxiv—cxv.) And as the most convenient subject of this comparison, we shall select Table C; though the same proof, and in the same manner, would be just as feasible of Table B. See F. Cath. i. 514 sqq.

Verification of Table C by the Nundinal Calendar, Type i in general, and by the Roman Calendar, from the Correction of Numa downwards, in particular.

i. Nund. Cal. Type i. Cycle xx.

B. C. 1245		June 7		Feria 1
		+ 206		+ 206
		213		207
		− 183		− 200
B. C. 1245		December 30		Feria 7
− 4		+ 21	=	5
B. C. 1241	Tab. C. Per. i.	December 30		Feria 4

ii. Nund. Cal. Type i. Cycle xlvi.

B. C. 1115		April 11		Feria 1
		+ 263		+ 263
		274		264
		− 244		− 264
B. C. 1115		December 30		Feria 8
− 2		+ 11	=	3
B. C. 1113	Tab. C. Per. ii.	December 30		Feria 3

iii. Nund. Cal. Type i. Cycle lxxii.

B. C. 985	Feb. 12	Feria 1
	+321	+321
	333	322
	−304	−320 *
B. C. 985 Tab. C. Per. iii.	Dec. 29 = 30 *	Feria 2

iv. Table C. Per. iv.

B. C. 857	Dec. 30	Feria 1
	−13	−5
B. C. 857	Dec. 17	Feria 4
−1		+5
B.C. 856 Nund. Cal. Type i. Cy. xcviii.	Dec. 17	Feria 1

v. Nund. Cal. Type i. cxxiii.

B. C. 731	Oct. 22	Feria 1
	+69	+69
	91	70
	−61	−64
B. C. 731	December 30	Feria 6
−2	+10	= +2
B. C. 729 Tab. C. Per. v.	December 30	Feria 8

vi. i. Nund. Cal. Type i. Cycle cxxxvi.

B. C. 666	Sept. 24	Feria 1
	+96	+96
	120	97
	−91	−96
B. C. 666	December 29	Feria 1
−1		+6
B. C. 665 Tab. C, Per. vi.	December 29	Feria 7

* In Table C, B. C. 985 was a common year; Nundinal Type i. Cycle lxxii. it was a leap year. The consequence of this was that this particular year, Dec. 29 in the style of Cycle lxxii, was = Dec. 30 in that of Table C, and *vice versa*, both being the *feria* 2ª of the Nundinal cycle. The style of Cycle lxxii, in fact, *pro tempore*, was Julian, and that of Table C, corresponding to it, was Gregorian. This anomaly however, such as it was, would be rectified in the last year of this cycle, B. C. 981–980, which, in Nundinal Type i. Cycle lxxii. would be common, and Period iii. 4, of Table C, would be leap year.

vi. ii. Calendar of Numa, Nundinal Period i.
Cycle ii. 24. 377 days.

U. C. 89	iv Non. Jan. B. C. 665.	Feb. 7	Feria 1
	iii Non. Feb.	Dec. 31	— 1
		— 2	— 2
	Kal. Feb.	Dec. 29	Feria 7

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vii. Tab. C. Per. vii.

B. C. 537	Dec. 28	Feria 6
− 1		+ 5
B. C. 536	Dec, 28	Feria 3

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i. Nund. Cal. Type i. Cycle clxii.

B. C. 536	July 27	Feria 1
	+ 154	+ 154
	181	155
	− 153	− 152
B. C. 536	Dec. 28	Feria 3

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ii. Calendar of Numa, Nundinal Period ii.
Cycle iv. 9. 355 days.

U. C. 218	Kal. Jan. (Jan. 1, Rom.) B. C. 536	Feb. 25	Fer. 1
	v Id. Dec. Dec. 9. Rom. =	Dec. 28	Fer. 3

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viii. i. Nund. Cal. Type i. Cycle clxxxvii.

B. C. 411	June 1		Feria 1
	+ 209		+ 209
	210		210
	− 183		− 208
B. C. 411	December 27		Feria 2
− 2	+ 11	=	+ 3
B. C. 409 Table C. Per. viii.	December 27		Feria 5

viii. ii. Decemviral Calendar, Nundinal Period i.
Cycle ii. 16. 355 days.

U. C. 345	viii. Id. Jan. (Jan. 6, Rom.) B. C. 409	Jan. 30	Feria 1
	Prid. Id. Dec. (Dec. 12, Rom.)	Dec. 27	Feria 5

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ix. i. Nund. Cal. Type i. Cycle ccxiii.

B. C. 281	April 3	Feria 1
	+ 267	+ 267
	270	268
	− 244	− 264
B. C. 281 Table C. Per. ix.	Dec. 26	Feria 4

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ix. ii. Decemviral Calendar, Nundinal Period ii.
Cycle iii. 24. 355 days.

U. C. 473	viii Id. Jan. (Jan. 6, Rom.) B. C. 281	Jan. 14	Feria 1
	iv Kal. Jan. (Dec. 27, Rom.)	Dec. 26	Feria 4

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x. Table C. Period x.

B. C. 153	December 25	Feria 3
− 2	+ 10	+ 2
B. C. 151	December 25	Feria 5

i. Nundinal Calendar, Type i. Cycle ccxxxix.

B. C. 151	February 4	Feria 1
	+ 324	+ 324
	328	325
	− 303	− 320
B. C. 151	December 25	Feria 5

ii. Irregular Roman Calendar, Cycle iii. 10. 355 days.

U. C. 603	vii Id. Jan. (Jan. 7, Rom.) B. C. 151,	Jan. 27	Feria 1
—	Id. Dec. (Dec. 13, Rom.)	Dec. 25	— 5

xi. i. Nundinal Calendar, Type i. Cycle cclxiv.

	B. C. 27	December 10	Feria 1
		+ 14	+ 6
	B. C. 27	December 24	Feria 7
	− 2	= + 11	+ 3
Table C. Period xi.	B. C. 25	December 24	Feria 2

ii. Julian Correction, Æra Juliana 21, 366 days.

U.C. 729 viii Id. Jan. (Jan. 6, Rom.)	B.C. 25.	Jan. 6	Feria 1
— ix Kal. Jan. (Dec. 24, Rom.)	—	Dec. 24	2

xii. i. Nundinal Type i. Cycle ccxc.

	A. D. 104	October 12	Feria 1
		+ 72	+ 72
		84	73
		− 61	− 72
Table C. Period xii.	A. D. 104	December 23	Feria 1

xii. ii. Julian Correction, Æra Juliana 149, 366 days.

U.C. 857 Non. Jan. (Jan. 5, Rom.)	A.D. 104.	Jan. 6	Feria 1
— xi Kal. Jan. (Dec. 22, Rom.)	—	Dec. 23	1

xiii. Table C. Period xiii.

A. D. 232	December 23	Feria 8
+ 2	+ 10	= + 2
A. D. 234	December 23	Feria 2

i. Nundinal Calendar, Type i. Cycle cccxvi.

A. D. 234	August 16	Feria 1
	+ 129	+ 129
	145	130
	− 122	− 128
A. D. 234	December 23	Feria 2

ii. Julian Correction, Æra Juliana 277, 366 days.

U.C. 985 vii Id. Jan. (Jan. 7, Rom.)	A.D. 232	Jan. 7	Feria 1
— x Kal. Jan. (Dec. 23, Rom.)	—	Dec. 23	Feria 8

The next is that, though the succession of Nundinal time, under its proper Julian style, in Table B, through the Julian Period of 112 or 140 years respectively, is altogether analogous to that in Table C, through the Julian Period of 128 years, yet, in comparing the constant decursus of Noctidiurnal time, under its proper Julian style, in the Nundinal Cycle, with the same thing in the Hebdomadal Cycle of the Fasti—Table A, which represents the latter, should be collated with Table C, rather than Table B, of the two which represent the former. The proper Julian Period of the Nundinal cycle, analogous to the proper Julian one of the Hebdomadal, it is manifest must be one which bears the same relation to the constant reckoning of Nundinal time in terms of Julian, as the Period of 112 or 140 years to that of Hebdomadal in the same; and that, in the nature of things, must be some multiple of the solar cycle of the Nundinal reckoning, as the Period of 112 or of 140 years is of that of the Hebdomadal.

The Solar cycle of Noctidiurnal time in Hebdomadal, and of both in Julian, is the Julian cycle of leap-year, multiplied by the Hebdomadal, $4 \times 7 = 28$. By parity of reason, the Solar cycle of Noctidiurnal time in Nundinal, and of both in Julian also, must be the cycle of leap-year multiplied by the Nundinal cycle, $4 \times 8 = 32$. The Hebdomadal and Julian Period of 112 years contains four cycles of 28 years, and that of 140 contains five: but neither of them contains an absolute number of cycles of 32 years. Nor shall we find any Period which does, except the Nundinal and Julian Period of 128 years, which contains four cycles of 32 years, and the Nundinal and Julian Period of 160, which contains five; the former consequently, analogous to the Hebdomadal and Julian Period of 112 years, and the latter to that of 140. Either of these would have answered our purpose; and if we have fixed on the former, it is because, besides being the more convenient of the two in point of application perpetually, it approaches most nearly to the ultimate standard of the Julian Period of the Fasti, 129 years.

This Period therefore being assumed as the proper Nundinal and Julian one, analogous to the proper Hebdomadal and Julian one of our Fasti; in this too, treated in all respects, from B.C. 1340 or 1241 downwards, like the Hebdomadal Period of our Tables, there will be one day less from Period to Period than in 128 simply Julian years, 46,751 instead of 46,752; and the first day, head, or epoch of this Nundinal Period, (the Nundinal Cycle itself going on all along according to its own law,) will drop one term, from Period to Period, in the order of Nundinal *feriæ*, just as that of the Hebdomadal Period has been seen to do, under the same circumstances, in the order of Hebdomadal. The number of Nundinal weeks in this Nundinal Period will be one day short of a complete number of Nundinal Cycles, 5844; just as that of Hebdomadal Cycles in these Periods of the Fasti is seen to be of a complete number of cycles of sevens; and the decursus of Noctidiurnal time in Nundinal in this Nundinal-Julian Period will be carried on, from Period to Period, through an epact of seven, as it is seen to be in the Hebdomadal-Julian one, under the same circumstances, through an epact of six.

These observations having been premised then, on comparing these two Tables A and C together, the reader cannot fail to perceive that for the first five Periods of each there is no difference between them. The succession of Hebdomadal time is carried on, from Period to Period, in the one through an epact of six terms, and that of Nundinal in the other through one of seven, and the Julian epoch of all these Periods in both, December 30, recedes one term, from Period to Period, in the order of Hebdomadal *feriæ*, in Table A, and one term in the order of Nundinal, in Table C. Consequently, for five Periods, from B. C. 1261 or 1241 to B. C. 729, *mutatis mutandis* there is no difference in the phenomena of these two Tables. One and the same Julian term, December 30, as the style of a certain Hebdomadal *feria* in the one, and that of a certain Nundinal one in the other, all this time proceeds in the same way in each.

He cannot fail to observe too that in Table A, there is no difference in this respect between the phenomena which it exhibits after the ingress of the vth Period, and those which it exhibited before. The Julian epoch of all the succeeding Periods down to the sixth remains the same in terms, at the ingress of each, and goes on descending one term, and only one, in the order of Hebdomadal *feriæ*, at the ingress of each, after Period v as much as before.

But with respect to the rest of the Periods after the vth, in Table C, he will observe the case is different. The descent of the epoch, in the order of the Nundinal *feriæ*, from Period to Period, goes on in those too, as it did before, but the Julian style of the epoch, instead of continuing the same in terms at the ingress of every Period after the vth, as it did at that of every Period before, begins now to drop one term, from Period to Period, in the order of the Julian notation, as well as one term in the order of Nundinal *feriæ*, as it had not done before—for example, from December 30, the *feria* 8a, at the ingress of Period v, to December 29, the *feria* 7a, at the ingress of Period vi; and from December 29, the *feria* 7a at the ingress of Period vi, to December 28, the *feria* 6a at the ingress of Period vii: and so on.

In a word, while the same law will be observed to regulate the succession of Noctidiurnal time, under its proper Julian style, whether in Hebdomadal or in Nundinal, through the first five Periods in both these Tables, and through the last nine, as much as through the first five, in Table A, the succession in the last nine Periods of Table C will be seen to be subjected to a different law; the practical operation of which, compared with that of the law which regulated the same course of things before, is evidently *this*, That, whereas the Julian epoch of the succession, while dropping one term from Period to Period, in the order of *feriæ*, remained the same in terms itself before, from this time forward, while receding one term from Period to Period, in the order of *feriæ*, as before, it begins to recede one term, from Period to Period, in the order of the Julian notation also, which it did not do before.

Now it would be difficult to say what could have originated, just at the ingress of the sixth Period in this Table, a change like this in the relation of Julian to Noctidiurnal and Nundinal time, which had gone on unchanged through five cycles of the Nundinal-Julian Period, 576 years, before, except the fact that B. C. 712, only 47 years before the same point of time, the decursus of Noctidiurnal in Nundinal time, under its proper Julian style, began to be as closely connected with the Roman Correction of Numa Pompilius, as it had been with the proper Nundinal Correction from the first. The Nundinal Cycle of this ancient Nundinal Calendar, from the time when the calendar of Numa came into existence, entered that calendar also, exactly in the state in which it had been transmitted from the date of the Nundinal Correction, until then; and from the time when it began to go on in both together, it was impossible to distinguish between its course and succession in the one, and its course and succession in the other.

Now the ingress, at this point of time, into our Tables of such a Calendar as the Correction of Numa, being to all intents and purposes the ingress of a fixed and invariable reckoning of the Noctidiurnal cycle, in a certain number or complex at a time, (that of the lengths of the different years of the Calendar of Numa,) and after a certain order of recurrence, (that of the years of the Cycle of Numa,) perpetually, it requires no argument to prove that, from this time forward, every cycle in the general succession of day and night must have found its place in the order of Nundinal *feriæ*, and in the order of the Julian notation, in and through some corresponding cycle in the Calendar of Numa. And the only question, which could be raised on this point, would be, How this was brought about? And no answer to that question could be supplied by any reasonings *a priori*, so effectually as by the mere inspection of Table C from Period v downwards, and the evidence of the fact itself.

For it is manifest from this inspection that, after the ingress of Period vi, the succession of Noctidiurnal time in Nundinal, under its proper Julian style, is carried on in this Table exactly as if the succession from this time forward had become simply Julian; with this difference only that it does not exhibit the same Julian term on the same Noctidiurnal *feria*, at the beginning of every fresh Period, as a simple Julian succession would do, but instead of that, the next lower Julian term on the next lower Nundinal *feria*. But this too is virtually the same thing as exhibiting the same term in the Julian notation, and the same *feria* in the Nundinal cycle, at the beginning of every Period perpetually. For, if we may assume that the proper Julian style of the epoch of Period v in this Table C was December 30, and the proper Nundinal style was the feria 8a, what difference would it make to the succession of Julian time in Nundinal through the next Period (Period vi), whether its proper Julian and Nundinal epoch were assumed December 30, the *feria* 8a still, or December 29, the *feria* 7a? or to the proper Julian and Nundinal style of Period vii, whether the epoch were still to be assumed December 30, the *feria* 8a, or December 28, the *feria* 6a? and so on. In all and each of these cases alike, the succession would still be that of the same Julian style, continuous and uninterrupted, in the same Nundinal style, continuous and unbroken also.

It is manifest therefore that the representation of the course of Julian in Nundinal time, through the last nine Periods of this Table C, from December 29, the *feria* 7a, to December 28, the *feria* 6a, and from December 28, the *feria* 6a, to December 27, the *feria* 5a, and so forth, is virtually that of the simple Julian, and wants nothing to be actually so, except that it should be reckoned at the ingress of every Period alike from December 30, the feria 8a. It follows that all the Periods in this Table, from the ingress of Period vi, though not before, may be treated as *continuous*—as if each of them had its full complement of Noctidiurnal cycles in terms of Julian perpetually, one of which preceded and one of which followed another without interruption, in the order of day and night, and in the order of Nundinal *feriæ*, and in the order of the Julian notation, all alike; and that the Nundinal character of any of these Periods, after the vth, under its proper Julian style, might be determined from the number of days in the intermediate Periods, and the Nundinal character of the vth—after the manner exemplified, on a former occasion, in our Origg. Kal. Italicæ[i].

For let it be proposed to determine the Nundinal character of the xiith Period—the Nundinal *feria* of December 23, A. D. 104—from the Nundinal character of Period v, the Nundinal *feria* of December 30, B. C. 729, the *feria* 8a.

The number of Periods from Period v to Period xii being seven, and one of these (Period v) a Period of 64 years, (half of that of 128,) we have

[i] Vol. ii. I. 24, 25-48.

From Dec. 30, B. C. 729, to December 23, A. D. 104,

	Days.
One Period of 64 years, (23,376 − 1)	23,375
Six Periods of 128 years, (46,751 × 6)	280,506
From Dec. 30, B. C. 729, to Dec. 23, A. D. 104	303,881
	= 37,985 × 8 + 1

Consequently, Dec. 30, B. C. 729, having been the *feria* 8ª, Dec. 23, A. D. 104, must have been the *feria* 1ª, as the Table shews it to have been.

Such however being the case with these two Tables, A and C, (one representing the course of Noctidiurnal time in Hebdomadal, the other in Nundinal, and each, under the same or analogous circumstances, through a series of Periods, beginning and ending so nearly alike in each,) it may naturally occur to the reader to ask for some explanation of the anomaly in these parallel successions of the same thing, which begins to appear at the ingress of the sixth of these Periods, but not before. It may naturally be inquired, If the proper Julian and Hebdomadal style of Table A, from Period i to v, is the proper Julian and Nundinal style of Table C, from Period i to v also, why is not the proper style of the former, from Period vi to the end, that of the latter, from Period vi to the end too? or if the proper Julian and Nundinal style of Table C, at the ingress of Period vi, undergoes a change of a certain kind, why does not the proper Julian and Hebdomadal style of Table A undergo one at the same time also?

And as this is not only, under the circumstances of the case, an obvious question, but one which directly affects that of the administration of the Noctidiurnal, the Hebdomadal, and the Julian, time of our Tables, as much as any which has yet been considered, we must endeavour to answer it so much the more carefully and completely.

For this purpose, we shall begin with proposing two Types of the succession of Noctidiurnal and Hebdomadal time in terms of Julian, in Table A, from B. C. 729, when the law of the succession in that Table first began to differ from that in Table C, down to A. D. 224 or 232, when it again begins to be the same with it—Table D, in which we will assume the law of the succession, between the extreme dates in question, as absolutely the same with that in Table C, and Table E, in which we will assume it as not absolutely the same with, but as simply analogous to, that in Table C.

TABLE D.

Type i of Table A, identical with Table C.

	Length.	Epact.	B. C.	Epoch.	Feria.		Feria.	Dom. Lett.
Period v	56	6	729–728			Dec. 30	6	B
vi	140	6	673–672	Dec. 29	5	30	6	B
vii	112	6	533–532	28	4	30	6	B
viii	140	6	421–420	27	3	30	6	B
ix	140	6	281–280	26	2	30	6	B
x	112	6	141–140	25	1	30	6	B
xi	140	6	29–28	24	7	30	6	B
			A. D.					
xii	112	6	112–113	23	6	30	6	B
xiii	140	6	224–225	22	5	30	6	B

TABLE E.

Type ii of Table A, analogous to Table C.

	Length.	Epact.	B. C.	Epoch.	Feria.	Epoch.	Feria.	Dom. Lett.
Period v	56	6	729–728			Dec. 30	6	B
vi	140	6	673–672	Dec. 29	4	30	5	C
vii	112	6	533–532	28	2	30	4	D
viii	140	6	421–420	27	7	30	3	E
ix	140	6	281–280	26	5	30	2	F
x	112	6	141–140	25	3	30	1	G
xi	140	6	29–28	24	1	30	7	A
			A. D.					
xii	112	6	112–113	23	6	30	6	B
xiii	140	6	224–225	22	4	30	5	C

On comparing these Tables together. the first observation upon them which occurs is this. That Table D is simply a Julian succession of its kind; as is intimated by the Hebdomadal Index of each of its Periods, the same in every instance, the Dom. Lett. B: and that Table E, on the contrary, though a Julian succession also, is not a simple Julian one. It is the Julian succession of our Fasti, in contradistinction to the simply Julian; and that mode or form of such a succession to which we have given the name of the Natural-Julian, in order to discriminate it from the Positive-Julian: the characteristic of which, as we have explained [k], was to recede, from Period to Period, two terms in the order of the Hebdomadal cycle, for one in the order of the Julian notation. In other words, this succession of Hebdomadal time in terms of Julian, in Table E, as we have also explained, is the true succession of Hebdomadal time in Natural-annual, treated as Julian, from Period to Period, as both began to proceed together at first.

The next is a kind of corollary to this first; viz. That, if the succession in Table D is simply Julian of its kind, it cannot be the true Julian succession at this period of the decursus of our Tables, the ingress of Period v, B. C. 729, because the simply Julian succession, and the true one of its kind, as we have seen, enters the Tables first, at the ingress of Period xxxv, A. D. 224, and having entered them first at that time, keeps possession of them ever after.

But as this question, whether the succession of Hebdomadal time in terms of Julian, or of Julian in terms of Hebdomadal, from B. C. 729 to A. D. 224, proposed in Table D, or that in Table E, is the true one of its kind, is after all a question of fact, and as such can be decided only by testimony; let us endeavour to reduce it to some practical test and criterion, by tracing the succession of Noctidiurnal time under its proper Julian style, in Nundinal as well as Hebdomadal, in some Period in which both must have proceeded conjointly, yet each according to its proper law, perpetually. And as to this Period, though neither the Julian and Hebdomadal Periods of our Fasti, of 112, or 140, or 56 years, nor the Julian and Nundinal Period of 128 years, are competent to serve our purpose, the Nundinal and Equable Period of 120 years, and even that of five years, will supply such a test as we are in search of, as conveniently and as completely as can be desired.

[k] Page l and li.

Section XII.—*On the decursus of Noctidiurnal time, under its proper Julian style, in Nundinal and Hebdomadal, in the Equable Period of* 120, *or of* 5, *years.*

We shall begin therefore with proposing the following Table, extracted from our General Tables of the succession of Noctidiurnal in Nundinal and Hebdomadal time, under its proper Julian style relatively to both, perpetually, from one of these Equable Periods of 120 years to another, according to the first and oldest of the Five Types of the Nundinal Correction of ancient Italy, of each of which we have given an account in our Origines Kalendariæ Italicæ[1].

[1] Vol. ii. 370 sqq. : 388 sqq. : 422 sqq. : 442 sqq. : 558 sqq. : cf. 674 sqq.

TABLE F.

Decursus or march of Noctidiurnal time, under its proper Julian style, in the Nundinal cycle of Italian antiquity, and in the Hebdomadal cycle of the Fasti, through the Nundinal Period of 120 *Equable years,* 132 *Nundinal, and through that of* 5 *Equable years,* 6 *Nundinal, according to the first Type of the Nundinal Correction, from B. C.* 1340 *to A. D.* 364.

Period	Cycle	Æra Cyc.		N. Feria.	B.C.		Hebd. Feria.		Dom. Lett.
	xvi	2741	Mesore 21	I	1265	June 15	4		B
i	xvii	2746	20	I	*1260	14	I	I leap-year	D
	xliv	2881	Epiphi 23	I	1125	April 14	4		C
ii	xlv	2886	22	I	1120	13	I	I leap-year	E
	lxxii	3021	Paüni 25	I	985	Feb. 12	4		ED
iii	lxxiii	3026	24	I	*980	10	I	2 leap-years	F
	xcv	3136	Paüni 2	I	871	Dec. 23	5		C
iv	xcvi	3141	I	I	*866	22	2	I leap-year	E
	cxxiii	3276	Pachon 4	I	731	Oct. 22	5		D
v	cxxiv	Nab. 22	3	I	*726	21	2	I leap-year	F
	cxxxiv	72	Pharmuthi 23	I	676	Sep. 28	7		F
vi	cxxxv	77	22	I	*671	*26	*3	I leap-year	A
	clxii	212	Phamenoth 25	I	536	July 27	6		G
vii	clxiii	217	24	I	*531	25	*2	I leap-year	B
	clxxxiv	322	Phamenoth 3	I	426	June 8	2		D
viii	clxxxv	327	2	I	*421	5	*5	2 leap-years	E
	ccxii	462	Mecheir 5	I	286	April 6	I		E
ix	ccxiii	467	4	I	*281	3	*4	2 leap-years	F
	ccxl	602	Tybi 7	I	146	Feb. 2	7		F
x	ccxli	607	6	I	*141	Jan. 30	*3 *	2 leap-years	G
	cclxiii	717	Chœac 14	I	32	Dec. 12	7		D
xi	cclxiv	722	13	I	*27	10	*3	I leap-year	F
	ccxci	857	Athyr 16	I	A. D. 109	Oct. 10	6		E
xii	ccxcii	862	15	I	*114	8	*2	I leap-year	G
	cccxiii	967	Phaophi 24	I	219	Aug. 22	2		B
xiii	cccxiv	972	— 23=24	I	*224	19=20	5=6	2 leap-years	C
	cccxli	1107	Thoth 27	I	359	June 21	2		C
xiv	cccxlii	1112	26	I	364	18	6	2 leap-years	DC

* After Feb. 29.

In explanation of this Table, it must be premised, i. That the Nundinal Period of six Nundinal years, 304×6 or 1824 days, being a complete measure of the Nundinal cycle, (228 cycles of eight days each,) if the first day of one of these Periods is the *feria* 1^a of the Nundinal cycle, the first of every other after it must be so too.

ii. This Nundinal Period of 1824 days containing 260 cycles of seven days, and *four* more of a 261st, as measured by the Hebdomadal cycle perpetually, it is a period of 260 Hebdomadal cycles, with an epact of four. Hence, if the epoch of one of these Periods is the *feria* 1^a of the Hebdomadal cycle, that of the next in order to it will be the *feria* $1^a + 4^a$ or *feria* 5^a, that of the third will be the *feria* $5^a + 4^a$, or *feria* 2^a, and so on.

iii. This Nundinal Period of six Nundinal years, 1824 days, containing one day less than the number contained in five equable years, 365×5, or 1825 days; whatsoever the equable date of the first day of a series of such Nundinal Periods, proceeding *pari passu* with a similar series of Equable Periods of five years, that of the first of the second must be the next lower equable term, that of the first of the third must be the next lower but one, and so forth—one day lower in the order of the equable notation than the equable style of the epoch, for every fresh Period of the succession.

iv. Five equable years, (1825 days,) containing one day less than five Julian in which there is one leap-year, (1826 days,) and two days less than five Julian in which there are two leap-years, (1827 days,) and the proportion of the Nundinal Period of six years to the equable one of five, in Noctidiurnal time, being always the same, (that of 1824 days to 1825,) it follows that both being referred to the decursus of Noctidiurnal time in terms of Julian, and supposed to borrow their proper style from the Julian of the time being, perpetually, if the style of the Equable Period of five years, in terms of Julian, descends one term in the order of the Julian notation, the style of the Nundinal Period of six years, in terms of Julian, must descend two terms. If the former descends two terms, the latter must descend three; and even if the former, for one of these Periods, appears to stand still in terms of Julian, or to descend 0 term in the order of the

Julian notation, the latter must nevertheless, even in that case, descend one term.

These observations having been premised [m], with one more explanation the preceding Table will be easily understood; and that is, that for the sake of the comparison which we were proposing to institute, it was necessary to select the last of these Periods of five equable years, or six nundinal, before, or next to, or coincident with, the ingress of the corresponding Julian Periods of the Fasti; and that the first five Periods of this Table F, from B.C. 1265 or 1260 to B.C. 726, are either actually or virtually the same with the first five in Tables A and C, and the last nine in the former, B.C. 676 or 671 to A.D. 364, with the last nine in the latter.

From the inspection then of this Table F, beginning with Cycles xvi and xvii of the first Type of the Nundinal Calendar in question, it will be seen that the equable date of Cycle xvi is Mesore 21, and that of Cycle xvii is Mesore 20, and the Nundinal *feria* of each is the *feria prima*; and that the Julian style of this *feria prima*, Cycle xvi, is June 15, and Cycle xvii is June 14: i.e. as there was only one leap-year in this Cycle of five years, treated as Julian, and that the year in which the xxiind Julian Period left our Tables, and the xxiiird came into them, there was no leap-day in the administration of the Julian time of the Tables *this* year, and equable time stood still in terms of Julian five years instead of four. This being consequently an instance of the third of the cases, mentioned supra [n], (that of equable time its receding 0 terms in Julian, in one of these Periods of five years,) the Julian style of the xviith Cycle is one day, but one day only, lower than that of Cycle xvi. The Hebdomadal style of Cycle xvi, it will be observed, is the *feria* 4ª, and that of Cycle xvii is the *feria* 1ª (i.e. the *feria* 4+4), according to the law of the succession of Noctidiurnal in Hebdomadal as well as in Nundinal time, in this Nundinal Period, explained supra [o].

The same inspection will shew that, for the rest of the Periods contained in this Table, down to the fifth, (Cycle cxxiii and cxxiv.) B.C. 731–726, *mutatis mutandis*, every-

[m] Cf. Origg. Kal. Ital. ii. 700 sqq. [n] Pag. xcvi. Art. iv.
[o] Pag. xcvi. Art. ii.

thing proceeds agreeably to the analogy of this first, Cycle xvi and xvii, B. C. 1265–1260: the only difference being that, at the ingress of Period iii, the Julian style drops two days, from Feb. 12, the Julian date of Cycle lxxii, to Feb. 10, that of Cycle lxxiii—but simply because in the corresponding Julian Cycle, B. C. 985–980, there were two leap-years, in one of which the equable style stood still in terms of Julian, and in the other, dropt one day, and therefore the Nundinal, at the ingress of Cycle lxxiii, dropt two days.

It is quite clear then that, through the first five Periods of this Table F, B. C. 1265–726, the Nundinal, the Hebdomadal, and the Julian succession of Noctidiurnal time must have proceeded together exactly in the manner, in which they are represented accompanying each other, through the first five Periods in Tables A and C; with no difference except that in Table F equable noctidiurnal and annual time is exhibited along with the other three, which was not exhibited in Tables A and C. It is equally clear that, while the Nundinal succession in terms of Julian through these five Periods in all these Tables is absolutely the same, (as has been shewn by actual comparison supra [p].) the Julian succession in particular, from which it borrows its proper style perpetually, is the Julian one of our Tables in general; in which equable time is liable to stand still, at stated times, more than four years, or to drop one day in terms of Julian only in eight years.

But if the reader continues his examination of the Table, he will perceive that, at the ingress of Period vi, Cycle cxxxiv, the equable date is Pharmuthi 23, and that of Cycle cxxxv is Pharmuthi 22—in which there is nothing different from usual: the Nundinal style too of both cycles is the *feria* 1ª, as it was bound to be. But the Julian date of Cycle cxxxiv being Sept. 28, and the number of leap-years in this Cycle (B. C. 676–671) being only one, the Julian date of the next Cycle, it might be expected, would be September 27—whereas *de facto* it is September 26. The Hebdomadal style too of Cycle cxxxiv being the *feria* 7ª, that of Cycle cxxxv, it might be supposed, would be the *feria* 1ª—whereas, *de facto*, it is the *feria* 3ª. And the anomalies thus discoverable first at the ingress of Period vi, B. C. 676–671, it will be perceived,

[p] Page lxxix sqq.

mutatis mutandis, continue to be discoverable down to the ingress of the xiith, A. D. 109–114—the equable succession going on in its proper style from Cycle to Cycle just as it had done from the first, the Nundinal *feria* of ingress continuing to be the *feria prima* too, but the Julian dates of these *feriæ*, from this time forward, dropping two days in consecutive cycles, where they had dropped one before, and three where they had dropped two; and the Hebdomadal epact under the same circumstances dropping with them, from four terms in the order of the Hebdomadal *feriæ* to three.

Now these facts are abundantly sufficient to prove that, in this Table F, from Period vi, B. C. 671, to the end, the administration of Nundinal in Julian time, *mutatis mutandis*, is precisely analogous to the same things in Table C also, from Period vi, B. C. 665, to the end. In this Table too, as compared with the parallel succession of Table A, the same anomaly began to be perceptible at the same point of time in the decursus of both; viz. without any interruption in the relation of the first *feria* of the Period to the Nundinal cycle, a change in the Julian style of that *feria* from the given Julian term to the next lower; a depression, from that time forward, of the Julian style of the Period, in proportion to that of the Nundinal, one term in the order of the Julian notation for one in the order of Nundinal *feriæ*. For that what takes place in Table F at the ingress of Period vi in the relation of Julian to Nundinal time, or *vice versa, mutatis mutandis*, is identical with what takes place in Table C, at the ingress of Period vi there too, is evident; December 29, at that point of time, instead of Dec. 30, beginning to represent the *feria* 7ª, in Table C, and September 26, at the same point of time, instead of September 27, beginning to represent the *feria* 1ª in Table F.

Now the explanation of this anomaly in Table C has been traced[q] to the complication in the 18th year of Period vi in that Table, B. C. 712, of the course and succession of Noctidiurnal time with the Roman Correction of Numa Pompilius, and the necessity thereby entailed, from that time forward, of reckoning this course and succession in the proper Nundinal Cycle and the proper Julian style of the Correction of

[q] Page lxxxviii.

Numa. And what can be the explanation of the similar anomaly at the same point of time, in this Table F, except the parallel case of the complication of Equable Cyclical Noctidiurnal time, in its proper Nundinal and proper Julian style, at the ingress of Period vi in this Table also, with Equable Nabonassarian? the xxviith Type of which having entered our Tables, along with the xxviith Julian Period, in a state of equality to, and identity with, the xxviith Cyclical, B. C. 728, (only two years before the ingress of the vith Period in this Table F, dated with Cycle cxxiv, B. C. 726.) by virtue of the same equality and the same identity retained possession of them ever after [r].

It follows that, as the succession of Nundinal time in Equable from this time forward was necessarily to be referred to the Nabonassarian, and not the Cyclical, Type of that kind, the Julian style of Nundinal time must now begin to take its law from that of Nabonassarian, not from that of Cyclical, equable. And the difference between these in relation to Julian being such that Nabonassarian was liable to descend one term in the order of the Julian notation every four years perpetually, and Cyclical, at stated times, only one in eight, and these times critically those at which one of our Julian Periods leaves our Tables, and another enters them, the phenomenon (into the cause of which we are inquiring) could not fail to begin to appear at the ingress of Period vi in Table F, and ever after, under analogous circumstances; viz. that the Equable style going on as before, and the Nundinal style going on as before, at these same points of time the Julian style of both should begin to be two days lower, where it was one before, and three days lower, where it was two before.

With regard then to the question, which we proposed to submit to a practical test of some kind, Whether the course and succession of Julian time in terms of Hebdomadal, through the last nine Periods of Table A, was bound to be simply the same with, or merely analogous to, that of Julian time in terms of Nundinal, through the last nine Periods of Table C; the distinction just pointed out in Table F, and

[r] Cf. Fasti Cath. i. 620–644: 657. Introduction to the Tables &c. 55.

confirmed by the matter of fact, must be decisive that, besides the recession of one term in the order of the Hebdomadal Cycle, from Period to Period, to which Julian time was liable while the Julian style itself remained stationary, as soon as the style begins to descend one term in the order of Julian notation, from Period to Period, Hebdomadal time became liable to descend one term more in the order of the Hebdomadal cycle. We see that in this Table F, after B. C. 726, and the ingress of the Nabonassarian Type of equable time, every thing else going on as before, Hebdomadal time began to be subject to a recession of one term, in the order of its proper cycle, for a recession of one term in the order of the Julian notation; while Nundinal went on as before. If so, the law, which for the last nine Periods of this Table regulated the decursus of Hebdomadal time in its proper cycle along with Julian, must have been that which, down to the same point of time, regulated the same thing in what we have called the Natural-Julian Type of the annual time of our Tables, in contradistinction to the Positive; that form of Annual and Noctidiurnal time, in the sense of Julian, in which the Julian style of the succession dropped one term in the order of the Julian notation, and two terms in the order of the Hebdomadal cycle, from Period to Period: not that, in which the Julian style, remaining the same in itself, dropt one term only in the order of the Hebdomadal cycle, from Period to Period also *.

* We have only to compare the Hebdomadal and Julian style of the ingress of Period viii and Period ix and Period x, in Table E, with that of the ingress of Cycle clxxxv and ccxiii and ccxli in Table F, B. C. 421, B. C. 281, and B. C. 141 in each respectively, to see that there could have been no difference between the course and succession of Hebdomadal time in terms of Julian, or of Julian in terms of Hebdomadal, in either as compared with the other: one and the same law must have regulated both in each. Thus at the ingress of Cycle clxxxv in Table F, the Hebdomadal and Julian style is June 5, the feria 5ª; and at the ingress of Period viii in Table E, the Hebdomadal and Julian style is December 27, the feria 7ª; and either of these implies the other: i. e. if June 5, B. C. 421, was the feria 5, Dec. 27 the same year must have been the feria 7ª, and vice versa. At the ingress of cycle ccxiii, B. C. 281, the Hebdomadal and Julian style is April 3, the feria 4; and at that of Period ix, B. C. 281 also, the Hebdomadal and Julian style is Dec. 26, the feria 5ª; and either of these in

SECTION XIII.—*On the parallel succession of Hebdomadal and Nundinal Time in Table A or E, and Table C, respectively, from the vith Period in each, as not necessarily subject to the same law.*

It cannot be considered extraordinary that, even without any change in the absolute or relative order of the Noctidiurnal cycle, or in the order of the Julian notation, or in the relation of a given Julian term at a particular time to a given Noctidiurnal one, the same Noctidiurnal term nevertheless, under its proper Julian style, should be one thing at a given time in a cycle of seven days, like the Hebdomadal, and another, in a cycle of eight, like the Nundinal. On the contrary, so far is it from being matter of course, because the same Noctidiurnal succession and the same Julian notation are running perpetually through each of these cycles at once, that therefore the same Noctidiurnal and the same Julian term, at a given time, should be the same constituent part of each, that, (as we have frequently observed[s],) if the same *feria* of the Hebdomadal cycle, and the same of the Nundinal, had once met together under the same Julian denomination, in a given year of the cycle of leap-year, and a given year of the solar cycle, of each, they could not meet together, under the same circumstances, again, in less than 28×32 or 896 years.

Nor is it much more extraordinary in itself, though not so apparent at first sight, that, when Nundinal time had now come to be referred to a certain complex of Noctidiurnal cycles, recurring perpetually in the same order, one of them continuous on another, while Hebdomadal time was still re-

like manner implies the other. Cycle ccxli, B. C. 141, the Hebdomadal and Julian style of the ingress is Jan. 30, the feria 3: and Period x, B. C. 141, also it is Dec. 25, the feria 3: and either of these too implies the other. The same thing might be shewn of the other Periods in each of these Tables, from the vith downwards, though not so directly in any of them as in these three. There can be no doubt consequently that one and the same law must have regulated the decursus of Julian in Hebdomadal time through all these Periods in each.

[s] Fasti Cath. i. 498. 528: Introduction, &c. 140. Cf. Origg. Kal. Ital. ii. 13, 14: Preliminary Address, xix, xx.

ferrible only to a similar complex, which, though equal to itself at all times, and continuous in its parts within itself, was not so in the wholes or totals, successively—nor always the same relatively to any thing else with which it might be constantly connected—even with the same Julian style or notation running at the same time through it as well as Nundinal, a given Julian term common to both should be found to have receded in a different way, and to a different extent, in a given time, in the Hebdomadal and in the Nundinal cycle respectively.

And this, as we have already seen, is the actual state of the case in the constant succession of Julian time in terms of Hebdomadal, in Table A, and the same succession in Table C, in terms of Nundinal, from the ingress of Period v in each, B. C. 729, down to Period xiii in each, A. D. 224 or 232. Between these extremes only is the difference perceptible. It did not appear before the ingress of Period vi, and it ceases to appear after that of Period xiii: and Period v, as we have seen, was precisely the date of the ingress of a new standard of reference for the Nundinal, in the Noctidiurnal, cycle—and this standard a fixed and invariable complex of Noctidiurnal time, always repeating itself in the same order both in the wholes and in the parts, and if not absolutely and simply Julian, from the first, yet agreeing with a simply Julian succession of its kind in the most essential property of such a succession, that of *continuity* in the order of the parts, and in the style or nomenclature of the parts—that of always proceeding in the natural order of the Noctidiurnal cycle, and in the natural order of *feriæ*, and in the corresponding order of the Julian notation.

It is a corollary to these conclusions that, in tracing the succession of the Nundinal cycle from Period to Period between B. C. 729 and A. D. 232, it is allowable to treat the succession, both in the order of the cycle and in that of the Julian calendar, as if it were absolutely continuous from Period to Period, just as much as the simply Julian would be; in tracing that of the Hebdomadal cycle, between the same extremes, as much as before, it is necessary to allow for an interruption in the continuity of the cycle in terms of the Julian notation. It is necessary to allow for the descent of the Julian style, from Period to Period, between the extremes in question, one term more in the order of the Hebdomadal cycle, than in that of the Nundinal.

We may illustrate and confirm this distinction, as a matter of fact, by comparing together the sum of Noctidiurnal and Hebdomadal time, and that of Noctidiurnal and Nundinal, each under its proper Julian style, from Period v to Period ix respectively, in each of these Tables, Table E and Table C; both which, as they themselves shew, begin Period v on the same Julian term, December 30, (the *feria* 6ª of the Hebdomadal cycle, in Table E, the *feria* 8ª of the Nundinal, in Table C.) and Period ix, on the same Julian term, December 26, the *feria* 5ª of the Hebdomadal cycle in Table E, and the *feria* 4ª of the Nundinal, in Table C.

First, with respect to the absolute sum of Noctidiurnal time in each of these parallel successions, i. Table E or A, Period v–ix, we have

One Period of 56 years	=	20,453 days
Two Periods of 140	=	102,268
One of 112	=	40,907
Four Periods, v–ix,		163,628
B. C. 729—281	=	$23{,}375 \times 7 + 3$
ii. Table C, we have		
One Period of 64 years	=	23,375 days
Three Periods of 128	=	140,253
Four Periods, v–ix,		
B. C. 729 to 281	=	163,628
	=	$20{,}453 \times 8 + 4$

Secondly, with respect to the Nundinal character of Period ix in Table C; this complex of 163,628 Noctidiurnal cycles being treated as continuous from Dec. 30, Period v, to Dec. 26, Period ix, divided by eight, = 20,453 Nundinal cycles, with an epact of four of one more. Hence the Nundinal character of Dec. 30, B. C. 729, at the ingress of Period v, having been the *feria* 8ª, that of Dec. 26, B. C. 281, at the ingress of Period ix, would be the feria 8 + 4, that is, the feria 4ª; as it is shewn by Table C.

But with respect to the Hebdomadal character of Period ix in Table A or E; this same complex of 163,628 Noctidiurnal cycles treated as continuous in this case also, and divided by seven, $=23,375$ cycles of seven, with an epact of three of one more. Hence the Hebdomadal character of Dec. 30, B. C. 729, at the ingress of Period v, having been the feria 6, that of Dec. 26, at the ingress of Period ix in Table E, would be the feria $6+3$ or 2; contrary to what is shewn by the Table, the *feria* 5ª. Treated as non-continuous in the order of the Hebdomadal cycle, this same complex of 163,628 Noctidiurnal cycles, in Table A, is the sum of Noctidiurnal time, from Dec. 30, B. C. 729, to Dec. 30, B. C. 281, in the four Positive-Julian Periods—Period v to ix; and the *feria* of ingress of the first, having been the feria 6ª, then, according to the rule laid down supra[t], the feria of ingress of the fifth, would be the feria 6−4, or feria 2, agreeably to what is shewn in Table A, at the ingress of this Period, December 30, the feria 2ª. The same complex in Table E is the sum of Noctidiurnal time in the four Natural-Julian Periods of our Tables, Period v–ix; and the *feria* of ingress of the first having been the feria 6, that of the fifth would be the feria $6-\overline{4\times 2}$[t], or 8, i. e. the feria 5ª; agreeably in this instance also to what is shewn in Table E, at the ingress of Period ix, December 26, B. C. 281, the *feria* 5ª. *

* The truth is, though Dec. 26 in this Table E, at the ingress of Period ix is nominally the same with Dec. 26 in Table C, at the ingress of Period ix there also; in Table E it is in reality a Gregorian term of that denomination, and in Table C it is a simply Julian one of the same.

In Table E, these several ingresses, from Period v to ix, drawn out on the purely Julian principle of a descent of one term in the Julian notation, for that of one term in the order of *feriæ* perpetually, and in the Gregorian corresponding to it, would stand as follows—

	B. C.	Julian	Fer.	Gregorian	Fer.
Period v	729	Dec. 30	6	Dec. 30	6
— vi	673	— 28	4	— 29	4
— vii	533	— 26	2	— 28	2
— viii	421	— 24	7	— 27	7
— ix	281	— 22	5	— 26	5

And here, the sum total of years, from Dec. 30, B. C. 729 to Dec. 30, B.C. 281, being 448 exactly, the sum total of days would be 163, 632, the number contained in 448 mean Julian years. And these being $=23,376\times 7$, it is manifest that, Dec. 30, B. C. 729 being the feria 6, Dec. 30, B. C. 281 must be the feria 6ª too. But the sum total of days, from Dec. 30, B. C.

[t] Page lvi.

SECTION XIV.—*On the transition of the Julian Time of the Tables, at the ingress of Period xxxv, into the Julian of the Correction of Cæsar; or* vice versa, *that of the Correction of Cæsar into the Julian of the Tables.*

The reader cannot fail to have observed that, in tracing the course of Nundinal time in Julian. through each of the Tables B, C, and F respectively, at the ingress of Period xiii in Table B and Table C, we assumed December 23 as the proper Julian representative of the Nundinal *feria* 6^a in the former, and the Nundinal *feria* 8^a in the latter, when the law of the succession until then required December 22; and at the ingress of Cycle cccxiv, in Table F, we assumed August 20 as the proper Julian style of the *feria* 1^a, when August 19 there too seemed to be required in the same capacity. And this must no doubt have appeared an anomaly; of which some explanation may naturally be expected.

In order to this then we observe first that, after all, the difference in each of these instances is merely a nominal one; for, whether the style of the ingress, Period xiii, be December 22 or 23, the *feria* of ingress in Table B will still be the feria 6^a, and in Table C the feria 8; and whether the style of the ingress, Cycle cccxiv, in Table F, be August 19 or August 20, the *feria* of the ingress will still be the *feria* 1^a. The distinction therefore is apparent, not real. It is merely that which exists at present between a simple Julian date and the corresponding Gregorian one, in reference to the same Hebdomadal *feria*. If December 22, or August 19, is the proper Julian date of the given Nundinal *feria* in either of these instances, December 23, or August 20, will be the corresponding Gregorian one.

729 to Dec. 22, B. C. 281, would be 163, 632–8, or 163, 624; and these being $= 23{,}374 \times 7 + 6$, it is manifest that the first of the number, Dec. 30, B. C. 729, having been the feria 6, the last Dec. 22, B. C. 281, must be the feria $6 + 6$, or feria 5^a. This is demonstrative that the succession in the first of these columns, headed Dec. 30 the feria 6, is simply the Julian; and that being the case, it is equally certain that the succession in the second is the Gregorian corresponding to this Julian, or the simply Julian raised in terms one day in the Julian style, without any change in the Hebdomadal, for every Period.

Secondly, we observe that, however contrary to the law of the succession of Nundinal in Julian time, from Period v to Period xiii, in Table B or C, December 23, instead of December 22, as the Julian representative of the given Nundinal *feria*, at the ingress of Period xiii in each, may seem to be; it is *de facto* the proper Julian style of the *feria* of ingress, just at that point of time. Let us shew this in the first of these cases, that of the proper Julian style of the ingress, Period xiii in Table B, the *feria* 6a, December 23, A. D. 224.

In the Roman calendar of the time being, this day corresponded to the x Kal. Januarias, U. C. 977; only 8 days, or one Nundinal cycle, before the end of that year. Hence, if x Kal. Jan. (Dec. 23) U. C. 977, was the *feria* 6a, Prid. Kal. Jan. (Dec. 31) must have been the *feria* 6a also; and iii Non. Jan. (Jan. 3, Roman,) U. C. 978, must have been the *feria* 1a; and (if Jan. 1, Roman, U. C. 978, coincided with Jan. 1, Julian, A. D. 225, as by our Roman calendar for that year it is seen to have done [v]) Jan. 3, Julian, A. D. 225, must have been the Nundinal *feria* 1a, as much as Jan. 3, Roman, U. C. 978; as by our Roman calendar that year also it is seen to have been. There can be no doubt then that, whatsoever the apparent anomaly in assuming December 23, instead of December 22, as the proper Julian style of the *feria* of ingress of Period xiii in Table B, December 23, not December 22, was the proper Julian style of the third *feria sexta* in the month of December, U. C. 977.

Thirdly, we observe that, in the regular succession of Nundinal Periods through this Table B, (each of them, as we have seen [x], from Period v downwards, to be treated as a Julian one of its kind, in which the Noctidiurnal cycle must go on uninterruptedly in the order of *feriæ* and the order of the Julian notation,) A. D. 224, the last year of Period xii, must be considered the regular year of the Julian leap-day, and one which would have the usual extra day in the usual place in the cycle. And this being assumed, for as much as we see from our Roman calendar [y], that December 31, Julian, A. D. 223, as being the same that year with the Kalends of

[v] Origg. Kal. Italicæ, iv. Appendix, civ. Cf. lxxx *n.*

[x] Supra, page lxxxviii.

[y] Origg. Kal. Ital. iv. Appendix, civ.

Januarius, U. C. 977, was Nundinal, it follows that January 5, Julian, A. D. 224, must have been the *feria* 6ª. Supposing then that A. D. 224, in the Julian calendar, was a leap-year, and had the leap-day, we have,

	A. D. 224, January 5,		the Nundinal *feria* 6
Add	352		352
	357		358
Subtract	−335	44 × 8	−352
We get	December 22		Nundinal *feria* 6

It is manifest therefore that, just at this moment of the ingress of Period xiii in Table B, December 22 was simply the proper *Julian* exponent of the third *feria sexta* of the Nundinal cycle, in terms of the Julian notation, in the month of December, A. D. 224; and if, as has also been seen, the actual Julian style in the sense of the Roman of the time being was December 23 (x Kal. Jan. U. C. 977), then December 22 and December 23, just at this moment, must have differed from each other only as the Julian date of a given Nundinal or Hebdomadal *feria*, at the same point of time, would have differed from the Gregorian.

The true explanation consequently of the anomaly in question is found in the relation of the Roman and Julian calendar, U. C. 977, to the proper Julian one, A. D. 224—or (what is the same thing) the Julian one of our Fasti—just at the end of Period xxxiv, and at the ingress of Period xxxv; viz. that the Kalends of Januarius, U. C. 977, were one day behind January 1, and coinciding with December 31, A. D. 223, instead of January 1, A. D. 224. And this being the state of the case with respect to the actual relation of the Roman year for the time being to the Julian, if this year, U. C. 977, was administered at Rome as a leap-year, then, the Kalends of Januarius, as our Roman calendar shews [z], the same year, being Nundinal, whether December 22, or December 23, the same year, should be the proper Julian date of the *feria* 6ª, would depend on the fact whether A. D. 224 (the corresponding year in our Tables to U. C. 977) was

[z] Origg. Kal. Ital. iv. Appendix, civ.

to be administered as a leap-year also, or as a common year.

For if A. D. 224 was to be administered as a leap-year, as well as U. C. 977, then December 31, Julian, A. D. 223, January 1, Roman, U. C. 977, being the Nundinal *feria prima*, Jan. 5, Julian, Jan. 6, Roman, A. D. 224, U. C. 977, would be the *feria* 6ᵃ; and we should get the succession of the *feria sexta* of the Nundinal cycle both in the Julian and the Roman style through the rest of the year, as follows.

Nundinal Feria 6ª.

A. D. 224, Julian.		*U. C. 977, Roman.*	
January	5	January	6
February	6	February	7
March	9	March	10
April	10	April	11
May	12	May	13
June	13	June	14
July	15	July	16
August	16	August	17
September	17	September	18
October	19	October	20
November	20	November	21
December	22	December	23

And if U. C. 977 was to be administered as a leap-year, and A. D. 224 as a common year, then, everything proceeding as before down to Feb. 6, Julian, February 7, Roman, after the month of February (29 days, U. C. 977, 28, A. D. 224) we should have as follows.

Nundinal Feria 6ª.

A. D. 224, Julian.		*U. C. 977, Roman.*	
March	10	March	10
April	11	April	11
May	13	May	13
June	14	June	14
July	16	July	16
August	17	August	17
September	18	September	18
October	20	October	20
November	21	November	21
December	23	December	23

Whether then December 22 or December 23 should be the proper Julian style of the third Nundinal *feria sexta*, in the month of December, A. D. 224, U. C. 977, as we have observed, would depend entirely on *this* distinction—Whether both these years, A. D. 224 and U. C. 977, were to be administered as leap-years, or one of them, U. C. 977, (as its place in the order of the proper Julian Cycle of the Correction of Cæsar, at that time required,) was to be administered as a leap-year, and the other, A. D. 224, (as its place in the order of the Cycle of leap-year in our Fasti, in the last year of our xxxivth Period, or the first of our xxxvth, required also,) to be administered as a common year? And that this year, U.C. 977, in the Roman Calendar of the time being, was actually administered as a leap-year, we know from the testimony of a contemporary monument, the Paschal Cycle of Hippolytus[a]; and that the last year of one of our Julian Periods, though coincident with the fourth year of the Cycle of leap-year, in the regular administration of the Julian time of the Tables, perpetually, requires to be treated as a common year, not as a leap-year, it is not necessary at this stage of our explanations to prove.

It may be objected indeed that, if U. C. 977 in the calendar of the time being was administered as a leap-year, and A. D. 224 the last year of our xxxvth Period, as a common year, the Roman and Julian year of the time being must have had 366 days, and the corresponding year of our Tables only 365. But it should be observed also that this Roman and Julian year, at this very time, was just one day behind the corresponding year of our Tables; the former beginning December 31 at midnight, A. D. 223, the latter January 1 at midnight, A. D. 224. And the seat of the leap-day in the former, in any case, being still between the Kalends of Januarius and the Kalends of Martius, the consequence of this distinction, that the former year had the leap-day, and the corresponding year of our Tables had it not, would be simply this, That there would be 60 days in the Roman Calendar, U. C. 977, from the Kalends of Januarius to the Kalends of Martius, and only 59 in the corresponding year of our Tables, from Jan. 1 to March 1, A. D. 224: and though the Kalends

[a] Origg. Kal. Italicæ, iv. 341. v.

of Januarius, U. C. 977, and the first of January, A. D. 224, would differ by a day, the Kalends of Martius, U. C. 977, and the first of March, A. D. 224, would be absolutely coincident and the same: and for the rest of the year there would be no difference between the Julian time of U. C. 977 at Rome, and that of A. D. 224 in our Tables.

It is clear then that this distinction between the actual administration of U. C. 977 at Rome, and A. D. 224 in the last year of the xxxivth Julian Type of our Tables, could have had no effect but that of *equating* the actual Julian time of the Roman Correction of Cæsar in the 269th year of its decursus, reckoned from the Kalends of Martius at midnight perpetually, to the 4228th in the natural and Julian time of our Tables, reckoned from March 1 at midnight also; and that too solely as a consequence of the coincidence, which was previously holding good, viz. that, by virtue of the administration of this Correction for the 268 years which had before elapsed, the Kalends of Januarius, U. C. 977, were falling on December 31 A. D. 223, but not yet on January 1 A. D. 224. And this also may be added to the other remarkable proofs of the controlling Providence, by which the whole of the preparatory process, in order to the ultimate resulting effect, (the transition of the Correction of Cæsar into the Julian, properly so called, just at the proper time, but not a moment before it,) was disposed and directed from first to last.

For when we consider that the Calendar began to be administered on the principle of making every third year a leap-year, so far back as U. C. 940, A. D. 186–187; and that this rule had been steadily adhered to down to U. C. 973, A. D. 219–220[b]; what was there to prevent its being observed also at the end of the next cycle of three years, U. C. 976, A. D. 222–223? The insertion at that time of the leap-day, necessary to equate the Kalends of Januarius to the 1st of January, would have made no difference to the decursus of the Nundinal Cycle in the Julian calendar of the time being, except for these two years, U. C. 976, A. D. 223, and U. C. 997, A. D. 224. and for these only *per accidens*. The 9th of January Julian would have been Nundinal A. D. 224. as well

[b] Origg. Kal. Ital. iv. 273–283. Appendix, ci.

as the 9th of January Roman, U. C. 977, instead of the 8th of the former and the 9th of the latter. But meanwhile the Kalends of Januarius, U. C. 977, would have been already equated to January 1, A. D. 224; and if U. C. 977 nevertheless was to be treated as a leap-year, and A. D. 224 as a common year, the Kalends of Januarius U. C. 978 would have risen to January 2 A. D. 225, instead of still falling on January 1. And if U. C. 977 was not to be treated as a leap-year at Rome, no more than A. D. 224 in the administration of our Tables, then, though the Kalends of Januarius U. C. 978 might have been found at par with January 1 A. D. 225, it would have been as the consequence of *this* anomaly, That, neither in the administration of the Julian time of our Tables, in the last year of Period xxxiv, nor in that of the actual Julian Calendar at Rome, U. C. 977, in the most important year of the whole Julian æra, to the transition of actual Julian time in the Calendar at Rome, into the Julian time of our Tables from the first, and into actual Julian time, carried back from the present day—was the leap-day, required by the law of the Cycle at that point of time in due course of things, taken into account. As it was, this *same* year, though a common year according to the positive rule of our Tables, was a leap-year by the actual reckoning of the time; and this very distinction it was, which enabled the actual Julian time of the time being to pass into that of the Tables, and into that of the present day, in a state of absolute equality to, absolute identity and absolute coincidence with, each.

There was consequently no real difference between December 22, the *feria* 6a, and December 23, the *feria* 6a also, at the ingress of Period xiii in Table B, or between Dec. 22, the *feria* 8a, and Dec. 23, the *feria* 8a, at the ingress of Period xiii in Table C. The former in each of these cases being assumed as the proper Julian style of the *feria* in question, the latter was the Gregorian, corresponding to it. And forasmuch as the latter, in each of these instances, was the proper Julian date in question, not only in the style of our own Tables, but in that of the Calendar for the time being also, we may draw from this coincidence the following important conclusion, viz. that the proper Julian style of our Tables, from Period to Period, is as much Gregorian, in its own nature, in contradistinction to Julian, before A. D. 225 as after. That it is Gregorian *de facto*, from the ingress of Period xxxv, A. D. 225, to the end of the Tables, is proved by its coincidence with the Gregorian of the present day, from the moment that came into being, October 15, A. D. 1582; and that it did not become Gregorian first, at the ingress of Period xxxv, follows from the fact that, whatsoever it was at the ingress of this Period, the same it had been at the ingress of every Period before it. And if the proper Julian, in the sense of the proper Roman, style of the time being fell in with that of the Tables first at the ingress of this Period, in a state of equality to it and identity with it, that too must have been in the form of the Gregorian, rather than of the simply Julian. And the inference from that fact also will be this, that the proper Julian style of our Tables from the first having been that of the Natural or Tropical, treated as Julian, the true Julian style of Natural-Annual, in the sense of Julian-Annual, time must have been Gregorian from the first. It is so, even at the present day, when a simply Julian Type of Noctidiurnal and Annual time has possession of the Calendar perpetually along with the Gregorian; and *a fortiori* must it have been so, when there was yet no representative of annual time in noctidiurnal but natural or tropical[c]. But to this subject we may have occasion to return hereafter.

It remains to say a few words on the particular case of Cycle cccxiv in Table F; at the ingress of which the epoch is assumed Phaophi 24, instead of Phaophi 23, Nab. 972.

The proper equable term required, according to rule, at the ingress of this cycle, it must be admitted, would have been Phaophi 23, the next lower equable term than the date of Cycle cccxiii Phaophi 24. But whichever of these it might have been, the Nundinal character of this term, the *feria* 1, must have been the same; and so far, in this case too, the difference would have been nominal more than real.

But the Julian date of Thoth 1, Nab. 972, in the style of our Tables, being June 28, A. D. 224, that of Phaophi 1 was July 28, and that of Phaophi 23, August 19, that of Phaophi 24, August 20. And the style of the Tables, at this point

c See supra, p. xlvii, xlviii.

of time, (i. e. ever since March 1,) as it has been seen, being that of the actual calendar for the time being also, the Roman and Julian U. C. 977, it follows that just at this time the Julian style of Thoth 1, Nab. 972, was June 28, both in the style of the Tables, and in that of the calendar of the time being, and that of Phaophi 23 was August 19, and that of Phaophi 24 was August 20, in both.

The question is therefore, which of these Julian terms, August 19 or August 20, was the proper style of the Nundinal *feria prima* the same year? And that question is answered by the scheme proposed supra[d], from which it appears that August 17, the same year, not August 16, being the *feria sexta* in the proper style of the calendar of the time being, August 20, not August 19, must have been that of the *feria prima* in the same. If so, the proper equable date of the same *feria*, corresponding to this proper Julian one of the time being, must have been Phaophi 24, not Phaophi 23, Nab. 972.

This being assumed accordingly, everything in this Table F, and in this Cycle cccxiv, will proceed exactly as it does in our general Tables[e], from which this was taken. The Nundinal character of the cycle will be the *feria prima;* its Julian date, August 20; its Hebdomadal, the proper Hebdomadal one of Augnst 20, A. D. 224, Dom. Lett. C, the *feria sexta*, four terms higher than that of Cycle cccxiii, the *feria secunda* *.

* Before we take our leave of this subject, and by way of a general confirmation of all that has been said and explained, in the preceding section, it may be desirable to exhibit the entire decursus of Noctidiurnal time both in the Nundinal and in the Hebdomadal cycle, in the actual administration of the calendar at Rome, from the date of the Julian correction, the Kalends of Januarius, U. C. 709, Dec. 30, B. C. 46, to the date of the transition of this correction into the Julian calendar of the Fasti, or, (what is the same thing,) the Julian calendar of chronology, or the Julian calendar of the present day, (carried back, according to its own laws, to the same time,) the Kalends of Januarius, U. C. 978, January 1, A. D. 225.

i. The total number of years in the Julian æra, between the *Kalendæ Januariæ*, U. C. 709, and the *Kalendæ Januariæ*, U. C. 978, was 269. The total number of days and nights, which entered the calendar in its actual administration at Rome, between these same extreme dates, was

[d] Supra, page cix. [e] Origg. Kal. Italicæ, ii. 696.

consequently 365 × 269, *plus* the number of *leap days* introduced *de facto* into the calendar also, in the same interval of time, whether required by the proper rule of the Julian calendar or not; viz. 69. See our Origg. Kal. Italicæ, iv. 343 note; and the Tables of the Roman Calendar, Table i, Julian Calendar, B. C. 46 to A. D. 225, pag. lxxxii–civ.

We have then,

	Days.
i. From the *Kalendæ Januariæ*, U. C. 709, to the *Kalendæ Januariæ*, U. C. 978, 365 × 269	98,185
Add for leap days	69
	98,254

And this complex of Noctidiurnal time between the extreme dates in question, agreeably to the distinction explained and illustrated supra, p. ciii, civ, regarded as one of Nundinal also, being treated as continuous both in the order of the Nundinal cycle and also in that of the Julian notation—in these 98,254 days and nights there must have been 12,281 consecutive Nundinal cycles, and six days and nights over and above of one more. From which it will follow, that whatsoever the Nundinal *feria* of the *Kalendæ Januariæ* (Jan. 1 Roman) U. C. 709, that of the *Kalendæ Januariæ* (Jan. 1 Roman) U. C. 978 must have been the same *feria* increased by six: and the *Kalendæ Januariæ*, Jan. 1 Roman, U. C. 709, (as it is proved in our Origg. Kal. Italicæ, ii. 39: iv. 45,) having been *de facto* the Nundinal *feria* 1ª, the *Kalendæ Januariæ* (Jan. 1 Roman) U. C. 978 must have been the Nundinal *feria* 1 + 6 or 7ª; and consequently the iii *Non. Januarias*, Jan. 3 Roman, the Nundinal *feria* 1ª: as it is shewn by our Roman calendar the same year (Origg. Kal. Ital. iv. Appendix, Tables, &c. Pag. civ.) to have been.

ii. This same complex of noctidiurnal time between the same extremes, regarded as one of Hebdomadal, and treated as continuous also in the order of the Hebdomadal cycle and in that of the Julian notation, like the Nundinal just considered, must have contained 14,036 consecutive cycles of seven days each, and two days over and above of one more. From which it would follow that, whatsoever the Hebdomadal *feria* of the *Kalendæ Januariæ* U. C. 709, that of the *Kalendæ Januariæ* U. C. 978 must have been the same *feria* increased by two. And the *Kalendæ Januariæ* U. C. 709 having been the same *de facto* with Dec. 30, B. C. 46—and Dec. 30, B. C. 46, Dom. Lett. A, having been *de facto* the *feria* 7ª—it follows that the *Kalendæ Januariæ* U. C. 709 also must have been the *feria* 7ª, and therefore the *Kalendæ Januariæ* U. C. 978 must have been the *feria* 7 + 2, or *feria secunda*. The *Kalendæ Januariæ* however, U. C. 978, as our Roman and Julian calendar shews, were the same with January 1 Julian, A. D. 225: and the Hebdomadal character of Jan. 1, A. D. 225, Dom. Lett. B, having been the *feria* 7ª, that of the *Kalendæ Januariæ* U. C. 978 must have been the *feria* 7ª too, not the *feria* 2ª.

It is manifest therefore that, though this complex of 98,254 noctidiurnal cycles is the entire sum of days and nights which actually entered the Roman calendar from the Kalends of January U. C. 709 to the Kalends of January U. C. 978, and whether in the Nundinal or in the Hebdomadal cycle alike, yet to treat it as continuous in the Hebdomadal cycle, as much as in the Nundinal, between the extremes in question, must infallibly issue out at last in an error of two terms in the order of the Hebdomadal cycle, in excess of the truth. It follows that whereas, regarded as a Nundinal complex of its kind, it is to be treated as continuous both in the order of the Julian notation, and in the order of the Nundinal cycle—regarded as an Hebdomadal one of the same kind, it must be treated as continuous indeed in the order of the Julian notation, between the extremes in question all along, but as non-continuous in the order of the Hebdomadal cycle: i. e. as a complex of Noctidiurnal cycles, reckoned in Hebdomadal perpetually, the head or epoch of which was liable to recede, at stated times, one term more in the order of the Hebdomadal cycle than in the order of the Julian notation—and these stated times, those of the egress and ingress of our own Julian Periods, between the extremes in question also.

And this being the case, inasmuch as, between the extremes in question, U. C. 709, B. C. 45, and U. C. 978, A. D. 225, a depression of one term would have to be allowed for at the egress of Period xxxii B. C. 29, and a depression of one more at the egress of Period xxxiii A. D. 112, and a depression of a third at the egress of Period xxxiv A. D. 224, it would seem to follow, at first sight, that the actual number of days and nights between the *Kal. Januariæ* U. C. 709, and the *Kal. Januariæ* U. C. 978, remaining the same, if the Kalends of Jan. U. C. 978, in a continuous Hebdomadal succession such as we began with supposing, must have been found entering on the *feria* 2ª, in a non-continuous succession of the same kind, such as we have been describing as the actual one between the extremes in question, they should have been found entering on the *feria* 2–3—i. e. the *feria sexta;* whereas, as we have seen, they entered *de facto* on the *feria* 7ª. Jan. 1 Roman, U. C. 978, or what was the same thing at that time, Jan. 1 Julian, A. D. 225, was the *feria* 7ª, not the *feria* 6ª.

It follows, from this discovery too, that though the absolute amount of the recession in the order of the Hebdomadal cycle, between the extremes in question, required by the law of our Tables, must have been three terms, in the parallel administration and course of Julian time at Rome, for some reason or other, it must have been *de facto* no more than two. Now this is explained, as soon as it is understood that one day more was introduced into the calendar, between the extremes in question, in the course of its actual administration at Rome, than its nature and law, as those of a Julian calendar, allowed of. The number of leap-years, from U. C. 709 to U. C. 978, both included, was 68; the number of leap-days, actually introduced into the calendar between the two extremes, was 69—one more than the law of the Julian calendar required or admitted. This one day it was which made the difference between a depression of the epoch, in the order of the Hebdomadal cycle at the end of the time, which should have amounted to three terms, and one *de facto* of two. This one leap-day over and above it was, which raised the Kalends of January, U.C.

978, *de facto* to Jan. 1, and consequently to the *feria* 7ª, A. D. 225; and without which they must infallibly have been found falling the same year Dec. 31, the *feria* 6ª, A. D. 224.

In dealing with the noctidiurnal and hebdomadal succession in the Julian time of our own Tables, between the same extremes, (i. e. from Dec. 30, B. C. 46, to Jan. 1, A. D. 225,) every thing is found to proceed in the usual way. In our Fasti also the number of years from Period xxxii 96, Dec. 30, B. C. 46, to Period xxxv 1, Dec. 30, A. D. 224, was 269; and in this number of years, the sum total of days and nights was 365×269 also, *plus* the number of leap-days taken into account in our Tables between the extremes in question; viz. three less than the number required by the proper Julian rule, $68-3$ or 65.

Hence,

	Days
From December 30, B. C. 46, to December 30, A. D. 224, we have 365×269	98,185
Add for 65 leap-years	65
	7) 98,250
	14,035 + 5

Consequently, December 30, B. C. 46, Dom. Lett. A, having been the *feria septima*, Dec. 30, A. D. 224, Dom. Lett. C must have been the *feria quinta;* December 31 the *feria sexta*, and Jan. 1, A.D. 225 (the *Kal. Jan.* U.C. 928) the *feria septima*: exactly, as we have seen, in conformity to the truth *.

* While we are still treating of this subject, we beg to take advantage of the opportunity so afforded, to correct a slight oversight in the calculation proposed in our Origg. Kal. Ital. iv. 343–346. note. It does not there appear why we should have assumed the epoch of that calculation, Dec. 29 at midnight, instead of Dec. 30 at midnight. But Dec. 30 being supposed the epoch of a Positive Julian succession of its kind, Dec. 29 would be that of a corresponding Natural Julian one. In other respects, it is indifferent whether such a calculation as this proceeds from Dec. 30, or Dec. 29. Assuming the latter, we have

	Days.	Days.
i. From Dec. 29, Fer. 6, B. C. 46 to Dec. 29, B. C. 29	$365 \times 17 + 4 =$	6209
ii. From Dec. 29, B. C. 29 to Dec. 29, A. D. 112	$365 \times 140 + 34 =$	51,134
iii. From Dec. 29, A.D. 112 to Dec. 29, — 224	$365 \times 112 + 27 =$	40,907
Dec. 29, Fer. 6, B.C. 46, to Dec.. 29, B.C. 224		7) 98,250
		14,035 + 5

Consequently Dec. 29, B. C. 46, having been the feria 6, Dec. 29, A. D. 224, must have been the feria 4ª, and Dec. 30 the feria 5ª, as before.

SECTION XV.—*On the relation of the mean Tropical time of the Tables to the mean Sidereal; and on that of both to the Noctidiurnal and the Hebdomadal, before and after A. D.* 225.

To revert then, before we bring these Prolegomena to an end, to the original subject of our observations, the mean Tropical and the mean Sidereal time of our Tables, and their relation to each other, and to any thing else to which each may require to be referred perpetually.

The mean Sidereal year, as we have seen, being the true measure of mean annual time in the sense of one complete revolution of the earth about the sun, and being also ultimately the standard to which mean annual time in the sense of the revolution of the seasons is referrible, it would have been desirable, in order to a clear understanding of the relation of these two forms of annual time to each other and to any thing else perpetually, that the Cycle of mean Natural Vernal Ingresses in Division B of our General Tables should have been accompanied by a corresponding Cycle of mean Sidereal Ingresses. And though it is now too late to supply such a desideratum *in annis expansis*, it is still in our power to propose a synopsis of the decursus of each in conjunction with the other, which will not take up much room, and yet give the reader as good an idea of the relation between them, and any thing else to which both may be referrible alike, perpetually, as if each was represented year by year. This therefore we shall proceed to do; premising however some general observations, preliminary to it.

i. The first, the simplest and most elementary, of the measures of time, and that which necessarily enters the other two continually, being the Noctidiurnal Cycle, (in the sense of one complete revolution of the same meridian from the mean sun to the mean sun again,) and the measure of this cycle being the period of 24 hours of mean solar time perpetually—it follows that, if this cycle had a proper beginning, and that beginning was one of the cardinal epochs of the rotation of the earth, sunset or sunrise, noon or midnight [f], and if, having once set out from that epoch, it went

[f] Cf. our Fasti Catholici, i. 136–139.

on ever after according to its proper law—it follows, we say, that, at whichever of those epochs this first such cycle began and ended, at the same must every succeeding one have begun and ended also; and if, in the case of the first, this epoch was the point of midnight, in that of every other after the first it must have been midnight likewise. And if this is to be assumed as the law of the revolution of every individual cycle of this kind, it must be assumeable as the law of any number of such cycles, taken together perpetually. If every one such cycle begins and ends at midnight, any series or sum of such cycles, taken together and treated as one complex of its kind, must begin and end at midnight also.

ii. The Julian year, as we have often observed, is a series of terms of this kind; a complex of Noctidiurnal cycles, the same in itself and in its constituent parts perpetually: the mean Julian year, one of 365 such cycles and a quarter of another, the actual Julian year, one of 365 every three times in succession, and of 366 every fourth—or, what amounts to the same thing, one of $365 \times 3 + 366$, or 1461, such cycles every four years. It follows that to speak of the *mean* or the *actual* Julian year, is to speak of such a complex of Noctidiurnal cycles as this; and though, in the preceding Sections, we have been all along speaking even of this under the name of the Julian year, and in order to distinguish the parts of such a complex asunder, as often as there was occasion, have adopted for that purpose the Julian style of such distinctions, the reader, if he pleases, may discard the further use of such language at present, and by the idea or name of the Julian year understand nothing to be meant but a certain complex of Noctidiurnal cycles, each beginning and ending at such and such an epoch, and in such and such an order, perpetually; and by the proper nomenclature of the Julian Calendar, nothing but the conventional mode of speaking of the only *real* distinctions between the parts of such a complex, the *place* of each at a given time in the *general* order of the Noctidiurnal succession, or the *particular* one of the Hebdomadal.

iii. It follows that a complex of this kind, assumed to have once set out from the point of midnight, must begin and end at midnight perpetually; and the distinction of the parts of such a complex *inter se* being simply the relation of each in its proper time and order to the general succession of the Noctidiurnal cycle, or to the particular one of the Hebdomadal, if the place of the first term in a given complex of this kind in the order of the Hebdomadal cycle is known, that of the second, and that of the third, and that of every other, as all dependent upon, and deducible from, that of the first, will also be known: and the place of the first term in the first of a series of such complexes being given, that of the first in the second, and that of the first in the third, and so on, to any extent—all as derived from that of the first or the head of the series—will be given too. For, as the Hebdomadal cycle is a succession of seven days and nights perpetually, and each of these complexes is one of 1461 days and nights perpetually; in every complex of this kind there will be 208 Hebdomadal cycles, and five terms more of a 209th. If then the place of the first term of the first such complex in the order of the Hebdomadal cycle, (the *feria*, as it is called,) is by hypothesis the *feria* 1ª, that of the first of the second must be the *feria* 1 + 5, or *feria* 6ª, that of the first of the third the *feria* 6 + 5, or *feria* 4ª, and so on—until, after the revolution of *seven* such complexes, the first term of the *eighth* is falling on the *feria* 3 + 5, (the *feria* of the first term of the *seventh*, augmented by *five*,) the *feria* 8 − 7, or *feria* 1ª, as at first. The period of restitution (ἀποκατάστασις) consequently of the first term of a complex of this kind, (the same with itself perpetually,) in terms of the Hebdomadal succession, (also the same with itself, and going on in the same way, perpetually,) from a given *feria* in that succession to the same again, would thus be a series of *seven* such complexes, 1461 × 7, or 10,227 days and nights, 1461 cycles of seven days and nights at a time, or Hebdomadal cycles, perpetually.

It follows that, if the first of a series of such complexes of 1461 Noctidiurnal cycles is supposed to have set out from the point of midnight in the Noctidiurnal revolution, and the point of midnight on the *feria prima* of the Hebdomadal cycle, though every subsequent one will set out from the point of midnight in the Noctidiurnal revolution, every eighth in order only will do so from the point of midnight on the *feria prima* of the Hebdomadal cycle. Every complex, between the first and the eighth, will set out from the point of midnight on a different *feria* of the Hebdomadal cycle—a *feria* five terms in advance of that of the last before it—the second, from midnight on the *feria* 6ª, the third, from midnight on the *feria* 4ª, the fourth, from midnight on the *feria* 2ª, and so on. And as long as each of these complexes consists of 1461 Noctidiurnal cycles, (neither more nor less perpetually,) so long this cycle of ingresses of successive complexes in the order of *feriæ* must be perpetual also. But if the last of a series of seven such complexes is supposed to consist of 1460 days and nights, and not of 1461; every thing else going on notwithstanding as before, the first term of the *eighth* will not return to the *feria* of that of the first, but only to the *feria* next before it. The sum of complete Hebdomadal cycles in this seventh complex will be 208, as much as in every other before it; but the sum of the epact in this case being *four* terms instead of *five*, if the *feria* of the first term of this seventh complex is supposed to have been the *feria* 3ª, that of the first of the eighth must be the *feria* 3 + 4, or *feria* 7ª.

iv. A complex of Noctidiurnal cycles, such as this, 1461 perpetually, being not only conceivable in itself, as much as any other, (a complex of seven, a complex of eight, a complex of sixty, a complex of 365,) but also a reality of its kind, (as real at least as the cycle of day and night of which it is made up,) and, as a reality of that kind composed of parts always the same, and equal among themselves, and recurring in the same order and the same number perpetually, being of the nature of an integer or unit—and the mean Tropical year, as an unit or integer too, being made up of the same elements as one of these complexes, it requires no argument to prove that both being assumed as measured, or measurable, alike perpetually by the Noctidiurnal cycle, the period of 24 hours of mean solar time, the ultimate standard of reference of such a complex as that of 364·24225 days and nights must be that of 365·25; and the ultimate standard of reference of *four* of the former, (365·24225 × 4) or the noctidiurnal complex of 1460·969 days and nights, must be *four* of the latter, (365·25 × 4,) the noctidiurnal complex of 1461.

In like manner, the mean Sidereal year, though an unit or integer of its own kind too, yet being made up of the same elements as one of these complexes, (a certain number of integral cycles of day and night, and a certain part of one more,)

365 d. 6 h. 9 m. 9·567 454 798 331 sec.
or 365·256 360 734 430 53 d.—

it is equally manifest that both being supposed as before to be perpetually measured or measurable by the Noctidiurnal cycle, the period of 24 hours, the ultimate standard of reference of *one* Sidereal unit of this kind must be one Noctidiurnal unit of 365·25 d. and that of *four* of the former, 1461·025 442 937 722 12 d., must be *four* of the latter, 1461 days and nights exactly.

v. The meaning of these different statements is that all these three complexes, Noctidiurnal, Tropical, and Sidereal, being made up of the cycle of day and night, and its aliquot parts, and all being reckoned in terms of the cycle of day and night, if one of them only is exactly commensurable with the cycle of day and night, and its proper period, perpetually—that one must be the standard of reference of the other two: and that one of course the Noctidiurnal. And this being assumed accordingly, then forasmuch as an unit or integer like this of 365·242 25 d. (the mean Tropical year,) is 0·007 75 d. (11 m. 9·6 sec.) less than the similar unit or integer, (the fourth part of this noctidiurnal complex of 1461 d.) 365·25 d.—and four of the former, 1460·969 d. are 0·031 d. (44 m. 38·4 sec.) less than four of the latter, 1461 d.—and forasmuch as an unit or integer like the mean Sidereal year, (365·256 360 734 430 53 d.) is 0·006 360 734 430 53 d. (9 m. 9·567 454 798 sec.) greater than the fourth part of the noctidiurnal complex of 1461 days, 365·25 d.—and four of the former,

1461·025 442 937 722 12 d.

are 0·025 442 937 722 12 d. (36 m. 38·269 819 19 sec.) greater than four of the latter, 1461 days exactly—it follows that one series of such Noctidiurnal complexes as this, and another of Tropical, and another of Sidereal, having all set out together at 0 h. 0 m. 21·6 sec. past the point of midnight in the Noctidiurnal revolution, and on the *feria prima* in the Hebdomadal cycle, at the end of the first of each in its proper succession, while the second in the Noctidiurnal must be found entering at 0 h. 0 m. 21·6 sec. from midnight, like the first, the second in the Tropical must be found entering at $\overline{\text{0 h. 0 m. 21·6 sec.} - \text{0 h. 44 m. 38·4 sec.}}$ *before* the point of midnight, and the second in the Sidereal at $\overline{\text{0 h. 0 m. 21·6 sec.} + \text{0 h. 36 m. 38·269 819 19 sec.}}$ *after* the point of midnight; and while the second of the Noctidiurnal will be found entering at 0 h. 0 m. 21·6 sec. from midnight on the *feria* 6ª of the Hebdomadal cycle, the second of the Tropical will be found entering 23 h. 15 m. 43·2 sec. past the point of midnight on the *feria* 5ª, and the second of the Sidereal 36 m. 59·869 819 19 sec. past the point of midnight on the *feria* 6ª. And this course of things, having once begun in this way, must continue, with successive cycles of each of these complexes, to go on in the same way; every Noctidiurnal one entering at 0 h. 0 m. 21·6 sec. after the point of midnight on a *feria* five terms in advance of that of origination, every corresponding Tropical one 44 m. 38·4 sec. in anticipation of the point of midnight and of this *feria*, and every Sidereal one 36 m. 38·269 819 sec. in advance of the point of midnight on this *feria*.

vii. From this state of the case it follows that Noctidiurnal, Hebdomadal, and Annual (in the sense of Tropical and Sidereal) time having begun to proceed in conjunction, each according to its own law, from a given epoch of the Noctidiurnal revolution and a given *feria* of the Hebdomadal cycle, the law which regulated the decursus of Annual in Noctidiurnal and Hebdomadal from the first, and determined the relation of Tropical and Sidereal time to Noctidiurnal and Hebdomadal ever after, must have been one of Recession on the epoch of origination, and one of Precession upon it, respectively; of Recession in the case of Annual in the sense of Tropical, of Precession in that of Annual in the sense of Sidereal, on one and the same point, the epoch of origination of the parallel succession of Noctidiurnal time, by hypothesis 0 h. 0 m. 21·6 sec. from midnight: i. e. Annual time, in the sense of Tropical, must have begun to *recede*, and Annual, in the sense of *Sidereal*, must have begun to *advance*, on this epoch from the very first, and must have gone on, receding and advancing upon it respectively, at the same rate, 44 m. 38·4 sec. in the former, 36 m. 38·269 819 2 sec. in the latter, for every cycle of its proper kind in each.

It follows also from the same state of the case, that Precession, properly so called, (the recession of mean Tropical time in mean Sidereal, the difference of mean Annual Tropical time and mean Annual Sidereal,) as both are referrible to the Noctidiurnal succession perpetually, is nothing more nor less than the sum of this recession on the epoch of midnight in one of these instances, and of this precession or advance upon it in the other—

	44 m.	38.4 sec.
	+ 36 m.	38.269 819 2 sec.
1 h.	21 m.	16.669 819 2 sec.

four times the difference of

	d.	h.	m.	s.
One mean Sidereal year	365	6	9	9·567 454 798
And one mean Tropical	365	5	48	50·4
			20	19·167 454 798

These observations having been premised, the Tables which we are about to exhibit will easily be understood.

The first of these is Table G, shewing the decursus of Tropical and Sidereal time, relatively to each other and to the Hebdomadal cycle, for the first two Periods, or first 252 years, of our Tables, digested in cycles of four years, 1461 days, 28 in the Period of 112 years, 35 in that of 140.

SECTION XVI. TABLE G.—*Decursus or march of mean Annual Tropical, mean Noctidiurnal, and mean Annual Sidereal, time, relatively to each other and to the* feriæ *of the Hebdomadal cycle, every four years, or* 1461 *days, through the first two Periods, or first* 252 *years, of the Fasti Catholici.*

Period i.	Cycle of Complex.	TROPICAL COMPLEX. 1460·969 days.		NOCTIDIURNAL COMPLEX. 1461 or 1460 days.					SIDEREAL COMPLEX. 1461·025 443 days.		RECESSION of the TROPICAL on the SIDEREAL.
A. M.			A.		B.	Feria.	D. L.	Days.		C.	D.
			h. m. s.		h. m. s.					h. m. s.	d. h. m. s.
1	i	April 25	0 0 21·6	April 25	0 0 21·6	1	C	1461	April 25	0 0 21·6	0 0 0 0
5	ii	April 24	23 15 43·2		0 0 21·6	6	E	1461		0 36 59·869 819	0 1 21 16·669 819
9	iii		22 31 4·8		0 0 21·6	4	G	1461		1 13 38·139 638	0 2 42 33·339 638
13	iv		21 46 26·4		0 0 21·6	2	B	1461		1 50 16·409 457	0 4 3 50·009 457
17	v		21 1 48·0		0 0 21·6	7	D	1461		2 26 54·679 276	0 5 25 6·679 276
21	vi		20 17 9·6		0 0 21·6	5	F	1461		3 3 32·949 095	0 6 46 23·349 095
25	vii		19 32 31·2		0 0 21·6	3	A	1461		3 40 11·218 914	0 8 7 40·018 914
29	viii		18 47 52·8		0 0 21·6	1	C	1461		4 16 49·488 733	0 9 28 56·688 733
33	ix		18 3 14·4		0 0 21·6	6	E	1461		4 53 27·758 552	0 10 50 13·358 552
37	x		17 18 36·0		0 0 21·6	4	G	1461		5 30 6·028 371	0 12 11 30·028 371
41	xi		16 33 57·6		0 0 21·6	2	B	1461		6 6 44·298 190	0 13 32 46·698 190
45	xii		15 49 19·2		0 0 21·6	7	D	1461		6 43 22·568 009	0 14 54 3·368 009
49	xiii		15 4 40·8		0 0 21·6	5	F	1461		7 20 0·837 828	0 16 15 20·037 828
53	xiv		14 20 2·4		0 0 21·6	3	A	1461		7 56 39·107 647	0 17 36 36·707 647
57	xv		13 35 24·0		0 0 21·6	1	C	1461		8 33 17·377 466	0 18 57 53·377 466
61	xvi		12 50 45·6		0 0 21·6	6	E	1461		9 9 55·647 285	0 20 19 10·047 285
65	xvii		12 6 7·2		0 0 21·6	4	G	1461		9 46 33·917 104	0 21 40 26·717 104
69	xviii		11 21 28·8		0 0 21·6	2	B	1461		10 23 12·186 923	0 23 1 43·386 923
73	xix		10 36 50·4		0 0 21·6	7	D	1461		10 59 50·456 742	1 0 23 0·056 742
77	xx		9 52 12·0		0 0 21·6	5	F	1461		11 36 28·726 561	1 1 44 16·726 561
81	xxi		9 7 33·6		0 0 21·6	3	A	1461		12 13 6·996 380	1 3 5 33·396 380
85	xxii		8 22 55·2		0 0 21·6	1	C	1461		12 49 45·266 199	1 4 26 50·066 199
89	xxiii		7 38 16·8		0 0 21·6	6	E	1461		13 26 23·536 018	1 5 48 6·736 018
93	xxiv		6 53 38·4		0 0 21·6	4	G	1461		14 3 1·805 837	1 7 9 23·405 837
97	xxv		6 9 0·0		0 0 21·6	2	B	1461		14 39 40·075 656	1 8 30 40·075 656
101	xxvi		5 24 21·6		0 0 21·6	7	D	1461		15 16 18·345 475	1 9 51 56·745 475
105	xxvii		4 39 43·2		0 0 21·6	5	F	1461		15 52 56·615 294	1 11 13 13·415 294
109	xxviii		3 55 4·8		0 0 21·6	3	A	1460		16 29 34·885 113	1 12 34 30·085 113
Period ii. 113	i	April 24	3 10 26·4	April 25	0 0 21·6	7	D	1461	April 25	17 6 13·154 932	1 13 55 46·754 932

Period ii	Cycle of Complex.	TROPICAL COMPLEX. 1460·969 days.		NOCTIDIURNAL COMPLEX. 1461 or 1460 days.					SIDEREAL COMPLEX. 1461·025 443 days.		RECESSION of the TROPICAL on the SIDEREAL.
A. M.			A.		B.	Feria.	D. L.	Days.		C.	D.
			h. m. s.		h. m. s.					h. m. s.	d. h. m. s.
113	i	April 24	3 10 26·4	April 25.	0 0 21·6	7	D	1461	April 25	17 6 13·154 932	1 13 55 46·754 932
117	ii		2 25 48·0		0 0 21·6	5	F	1461		17 42 51·424 751	1 15 17 3·424 751
121	iii		1 41 9·6		0 0 21·6	3	A	1461		18 19 29·694 570	1 16 38 20·094 570
125	iv		0 56 31·2		0 0 21·6	1	C	1461		18 56 7·964 389	1 17 59 36·764 389
129	v		0 11 52·8		0 0 21·6	6	E	1461		19 32 46·234 208	1 19 20 53·434 208
133	vi	April 23	23 27 14·4		0 0 21·6	4	G	1461		20 9 24·504 027	1 20 42 10·104 027
137	vii		22 42 36·0		0 0 21·6	2	B	1461		20 46 2·773 846	1 22 3 26·773 846
141	viii		21 57 57·6		0 0 21·6	7	D	1461		21 22 41·043 665	1 23 24 43·443 665
145	ix		21 13 19·2		0 0 21·6	5	F	1461		21 59 19·313 484	2 0 46 0·113 484
149	x		20 28 40·8		0 0 21·6	3	A	1461		22 35 57·583 303	2 2 7 16·783 303
153	xi		19 44 2·4		0 0 21·6	1	C	1461		23 12 35·853 122	2 3 28 33·453 122
157	xii		18 59 24·0		0 0 21·6	6	E	1461		23 49 14·122 941	2 4 49 50·122 941
161	xiii		18 14 45·6		0 0 21·6	4	G	1461	April 26	0 25 52·392 760	2 6 11 6·792 760
165	xiv		17 30 7·2		0 0 21·6	2	B	1461		1 2 30·662 579	2 7 32 23·462 579
169	xv		16 45 28·8		0 0 21·6	7	D	1461		1 39 8·932 398	2 8 53 40·132 398
173	xvi		16 0 50·4		0 0 21·6	5	F	1461		2 15 47·202 217	2 10 14 56·802 217
177	xvii		15 16 12·0		0 0 21·6	3	A	1461		2 52 25·472 036	2 11 36 13·472 036
181	xviii		14 31 33·6		0 0 21·6	1	C	1461		3 29 3·741 855	2 12 57 30·141 855
185	xix		13 46 55·2		0 0 21·6	6	E	1461		4 5 42·011 674	2 14 18 46·811 674
189	xx		13 2 16·8		0 0 21·6	4	G	1461		4 42 20·281 493	2 15 40 3·481 493
193	xxi		12 17 38·4		0 0 21·6	2	B	1461		5 18 58·551 312	2 17 1 20·151 312
197	xxii		11 33 0·0		0 0 21·6	7	D	1461		5 55 36·821 131	2 18 22 36·821 131
201	xxiii		10 48 21·6		0 0 21·6	5	F	1461		6 32 15·090 950	2 19 43 53·490 950
205	xxiv		10 3 43·2		0 0 21·6	3	A	1461		7 8 53·360 769	2 21 5 10·160 769
209	xxv		9 19 4·8		0 0 21·6	1	C	1461		7 45 31·630 588	2 22 26 26·830 588
213	xxvi		8 34 26·4		0 0 21·6	6	E	1461		8 22 9·900 407	2 23 47 43·500 407
217	xxvii		7 49 48·0		0 0 21·6	4	G	1461		8 58 48·170 226	3 1 9 0·170 226
221	xxviii		7 5 9·6		0 0 21·6	2	B	1461		9 35 26·440 045	3 2 30 16·840 045
225	xxix		6 20 31·2		0 0 21·6	7	D	1461		10 12 4·709 864	3 3 51 33·509 864
229	xxx		5 35 52·8		0 0 21·6	5	F	1461		10 48 42·979 683	3 5 12 50·179 683
233	xxxi		4 51 14·4		0 0 21·6	3	A	1461		11 25 21·249 502	3 6 34 6·849 502
237	xxxii		4 6 36·0		0 0 21·6	1	C	1461		12 1 59·519 321	3 7 55 23·519 321
241	xxxiii		3 21 57·6		0 0 21·6	6	E	1461		12 38 37·789 140	3 9 16 40·189 140
245	xxxiv		2 37 19·2		0 0 21·6	4	G	1461		13 15 16·058 959	3 10 37 56·858 959
249	xxxv		1 52 40·8		0 0 21·6	2	B	1460		13 51 54·328 778	3 11 59 13·528 778
Period iii.											

SECTION XVII.—*Explanations and Observations.*

i. In this Table, column A is the succession of Tropical Ingresses, (supposed to have set out at 0 h. 0 m. 21·6 sec. from midnight on the *feria prima* of the Hebdomadal cycle,) for every four years; shewing the *feria* and the point of the *feria* relatively to midnight, at which each of them, after the first, enters the Table. Column C is the succession of Sidereal Ingresses, corresponding to these, beginning also at 0 h. 0 m. 21·6 sec. from midnight on the *feria prima.* The former are obtained by the subtraction of 44 m. 38·4 sec. from the primary ingress, 0 h. 0 m. 21·6 sec. from mid. on the *feria prima;* the latter by the addition of 36 m. 38·269 819 sec. to this same ingress perpetually. And these Tropical Ingresses in column A, as far as they proceed, will be seen to be the same with those of our Fasti Temporis Catholici, or General Tables, in Division B, every four years, augmented merely (for the reason explained in our Fasti Cath. [g]) by 11 m. 31·2 sec.

ii. Column B is the Noctidiurnal complex of 1461 or 1460 days and nights, compared with the Tropical and the Sidereal through each of these cycles of four years; supposed to have set out in the first instance at 0 h. 0 m. 21·6 sec. from midnight on the *feria prima*, and in the second to do so at 0 h. 0 m. 21·6 sec. from midn. on the *feria* 1 + 5, or *feria* 6ª, in the third at 0 h. 0 m. 21·6 sec. from midn. on the *feria* 6 + 5, or *feria* 4ª, and so on perpetually.

iii. Column D is the Recession of the Tropical on the Sidereal Ingress for each of these cycles of four years also, the Precession, properly so called, the difference of the sum of mean annual Tropical time, and of that of mean annual Sidereal, in one of these cycles of both kinds respectively. It is the recession of Tropical time on the epoch, 44 m. 38·4 sec. × *N*, (the number of cycles,) at each of these ingresses, *plus* the advance of Sidereal upon it (36 m. 38·269 819 sec. × *N*) at each of them also. And as these two sums, for any one of these cycles of both kinds, amount to 1 h. 21 m. 16·669 819 sec. this column D is obtained by the addition of 1 h. 21 m. 16·669 819 sec. to the epoch, 0 h. 0 m. 21·6 sec. from midn. perpetually; and the addition of the figures in this column D

[g] iv. 503 sqq.–523 sqq. Cf. the Preface to the General Tables.

to those which stand over against them in column A gives the figures opposite to both in column C; and the subtraction of these in column D from the opposite ones in column C gives the figures over against both in column A. Thus, to take the last Tropical Ingress in Period i, that of Cycle xxviii, we have,

			h.	m.	s.
Col. A, Cycle xxviii. Tropical Ingress on the *feria*	2	at	3	55	4·8
Recession of the Tropical on the Sidereal Ingress, (col. D) 1 day = (one *fer.*)	1		12	34	30·085 113
Cycle xxviii. col. C. Sidereal Ingress, *feria*	3	at	16	29	34·885 113

iv. To each of these columns, A, B, C respectively, we have added also the Julian dates of these several Ingresses, on the hypothesis that the first in each instance was April 25; and to col. B in particular we have annexed the cycle of the Dominical Letter, though, as we have explained [h], neither of these is indispensable to our present purpose, and if the reader pleases, he is at liberty to leave both out of sight. Nothing is necessary but the *feriæ* of these several Ingresses at the beginning of each of these cycles; first and properly those of the Noctidiurnal complex in col. B, and secondly, as dependent on these, those of the Tropical in col. A, and those of the Sidereal in col. C.

v. From the comparison then of these several successions, in col. A, col. B, and col. C, respectively, the reader will perceive that though all three set out from 0 h. 0 m. 21·6 sec. after the point of midnight, or (as we may assume for the purpose of the argument at present,) from the point of midnight in the Noctidiurnal revolution, and on the *feria prima* of the Hebdomadal cycle, yet, beginning with the very first revolution of all in conjunction, the law of the decursus or march of each in the order of the Hebdomadal cycle is one of advance, *five* terms, for every cycle and in the order of the Noctidiurnal revolution, as reckoned from midnight to midnight, perpetually. In the Noctidiurnal Complex (col. B) alone, it is one of a constant return to this point from Complex to Complex; in the Tropical (col. A) it is that of a constant recession upon it, and in the Sidereal (col. C) it

h Pag. cxix.

is that of a constant advance upon it. So that, with the Ingress of the second Complex in each instance, while the Noctidiurnal is falling at midnight on the *feria* 6ª, the Tropical is seen to be falling 23 h. 15 m. 43·2 sec. after midnight on the *feria* 5ª, and the Sidereal 0 h. 36 m. 59·869 819 sec. after midnight on the *feria* 6ª; and with the Ingress of the eighth such Complex in each instance, while the Noctidiurnal is still falling at midnight on the *feria prima*, the Tropical is falling at 18 h. 47 m. 52·8 sec. after the point of midnight on the *feria septima*, and the Sidereal at 4 h. 16 m. 49·488 733 sec. after midnight, on the *feria prima*. That is, after the first seven cycles of this kind, (the first 28 years of our Tables,) while Noctidiurnal time is found to be still entering at the same point in the order of the Noctidiurnal revolution, the point of midnight, and on the same *feria* in the order of the Hebdomadal cycle, the *feria prima*, as at first, Tropical time is seen to have already receded, and Sidereal time to have already advanced, the former 5 h. 12 m. 28·8 sec., the latter 4 h. 16 m. 49·488 733 sec. on the *feria* of origination, the *feria prima*, and on the epoch of origination of that *feria*, the point of midnight.

vi. Tropical time in one of these Complexes, and Sidereal in another, having thus begun to recede and advance on the epoch of origination respectively, and the difference between them, (the Precession properly so called,) as we have explained, being the *sum* of this recession and this advance from Cycle to Cycle perpetually; the reader will see that at the end of the first 28 years of our Tables, and at the Ingress of the *eighth* Complex of both kinds, the Precession in col. D amounts to 9 h. 28 m. 56·688 733 sec. of mean solar time: and at the end of the first 56 years, with the Ingress of the *fifteenth* cycle, it amounts to 18 h. 57 m. 53·377 466 sec.; i. e. more than three quarters of an integral cycle of day and night, *one* period of 24 hours: and at the end of the first 68 years, with the Ingress of the *eighteenth* cycle, it has reached the sum of 23 h. 1 m. 43·586 923 sec., little short of one entire period of 24 hours of mean solar time.

He will perceive too that, at this period of the decursus of Tropical and Sidereal time, the former in col. A is falling at

11 h. 21 m. 28·8 sec. from midnight on the *feria prima*, and the latter in col. C, at 10 h. 23 m. 12·186 923 sec. from midnight on the *feria secunda*. Hence, for the next two years, the 69th and 70th of the Period in general, the first and second of this *eighteenth* Complex, the march of both together will be as follows.

Table G.	*Tropical Ingress.*		*Sidereal Ingress.*	
	h. m. s.		h. m. s.	
Per. i. 69. Cyc. xviii. 1	11 21 28·8	Fer. 1	10 23 12·186 923	Fer. 2
Epact	5 48 50·4	+ 1	6 9 9·567 455	+ 1
Per. i. 70. Cyc. xviii. 2	17 10 19·2	Fer. 2	16 32 21·754 378	Fer. 3
Epact	5 48 50·4	+ 1	6 9 9·567 455	+ 1
Per. i. 71. Cyc. xviii. 3	22 59 9·6	Fer. 3	22 41 31·321 833	Fer. 4

That is, at the beginning of the 71st year of the first Period of our Tables the Tropical Ingress is as nearly as possible 24 hours of mean solar time in the order of the Noctidiurnal cycle, and in the order of *feriæ*, behind the Sidereal; the former on the *feria* 3a, at 22 h. 59 m. 9·6 sec. from midnight, the latter on the *feria* 4a, at 22 h. 41 m. 31·321 833 sec. from midnight. This is abundantly sufficient to verify our statement[i] respecting the rate of the recession of mean Annual Tropical time on mean Annual Sidereal, (the Precession, properly so called,) cyclically reckoned; viz. one period of 24 hours, one Noctidiurnal revolution, one *feria* of the Hebdomadal cycle, every 70 years.

In like manner, at the Ingress of the *eighth* Complex of both kinds in the second Period, at the end of the first 140 years of our Tables, A. M. 141, we have

The Tropical Ingress at 21 h. 57 m. 57·6 sec. on the feria 5a.
The Sidereal Ingress at 21 h. 22 m. 41·043 665 sec. on the feria 7a.

i. e. as nearly as possible two periods of 24 hours, two revolutions of day and night, two *feriæ* of the Hebdomadal cycle, asunder.

Again, at the end of the first 208 years of the Tables, the Ingress of the *twenty-fifth* Complex of the second Period, we have,

[i] Page xxix supra.

	Tropical Ingress.					Sidereal Ingress.				
	h.	m.	s.			h.	m.	s.		
Per. ii. xxv. 1. A.M. 209	9	19	4·8	Fer. 6		7	45	31·630 588	Fer. 2	
Epact	5	48	50·4	+	1	6	9	9·567 455	+	1
Per. ii. xxv. 2. A.M. 210	15	7	55·2	Fer. 7		13	54	41·198 043	Fer. 3	
Epact	5	48	50·4	+	1	6	9	9·567 455	+	1
Per. ii. xxv. 3. A.M. 211	20	56	45·6	Fer. 1		20	3	50·765 498	Fer. 4	

That is, at the end of three Periods of 70 years, the Tropical Ingress is as nearly as possible 72 hours of mean solar time, three revolutions of day and night, three *feriæ* of the Hebdomadal cycle, behind the Sidereal. Nor, if this series of Complexes of both kinds be supposed to be continued long enough, can there be any doubt that this recession of mean Annual Tropical time on mean Sidereal at the rate of one period of 24 hours, one day and night, one *feria* of the Hebdomadal cycle, would be seen to go on, conformably to the truth of things, if not indefinitely, yet for a very long time. Let us compare, for instance, the relation of the former to the latter, at the end of 100 periods of 70 years of both—as may easily be done with the help of our Supplementary Tables[k].

Table xxxii. and xxxi.	d.	h.	m.	s.
7000 mean Sidereal years =	2,556 794	12	36	12·183 588 317
7000 mean Tropical years =	2,556 695	18		
Difference or Precession =	98	18	36	12·183 588 317

Only 1 d. 5 h. 23 m. 47·8 sec. less than 100 days, the exact amount, at the rate of one day in 70 years, in 7000 years.

vii. It is observable also that, at the end of the first 112 years of our Tables, (the end of the first of these two Periods, at the Ingress of the first Complex of the second,) the Recession in col. D. amounts to 1 d. 13 h. 55 m. 46·754 932 sec., which, though 10 h. 4 m. 13·245 068 sec. less than 48 hours, is 13 h. 55 m. 46·754 932 sec. greater than 24. Cyclically reckoned then, the Precession may be assumed at two Noctidiurnal cycles, two Hebdomadal *feriæ*, in the Period of 112 years, as well as that of 140; and it will be seen, in the first instance of this kind also, Period ii. Cycle i. 1. A. M. 113,

[k] Introduction to the Tables of the Fasti Catholici, &c. pag. lxxx.

while the Tropical Ingress is falling only 3 h. 10 m. 26·4 sec. after midnight on the *feria* 6ª, the Sidereal is falling only 6 h. 53 m. 46·815 068 sec. before midnight on the *feria* 1ª.

viii. It is observable also that, though the Noctidiurnal unit, the Complex of 1461 days and nights, which we have supposed to be going on in this Table perpetually along with the Tropical one of 1460·969 days, and the Sidereal one of 1461·025 443 days, returns to the *feria* of origination, and to the epoch of that *feria*, every *seven* revolutions of all of them in common, (Cycle viii, xv, xxii, in Period i, Cycle viii, xv, xxii, and xxix in Period ii,) neither of the others does so, nor in fact can do; the law of the decursus, in one of them, as we have seen, being a law of *recession* on the *feria* of origination and the epoch of that *feria*, and that in the other being a law of *advance* on both, perpetually. It follows from this distinction that while, in the constant revolution of the Noctidiurnal cycle in and among the *feriæ* of the Hebdomadal, and in and among the years of the cycle of four years, there is, and must be, such a thing as the Period of 1461 × 7 days and nights, 10 227 Noctidiurnal cycles, which Chronologers mean by the *Solar cycle*, there neither is nor can be, as we have often had occasion to observe[1], a similar period in the constant revolution of Tropical or Sidereal time in Noctidiurnal and Hebdomadal, except as cyclically reckoned, and treated for a time as the same with a Noctidiurnal succession of a similar kind.

ix. It follows too that as each of these Complexes is an unit, the same with itself both in the parts and in the sum total perpetually, the sum of Noctidiurnal time in 28 of these complexes, (as many as enter the Period of 112 years,) in terms of itself must be 1461 × 28, or 40,908 days and nights, and in 35 of the same, (as many as enter the Period of 140 years,) must be 1461 × 35, or 51,135; the sum total in 28 Tropical ones must be 1460·969 × 28, or 40,907·132 days and nights, and in 35 must be 1460·969 × 35, or 51,133·915, the former of which, cyclically reckoned, might be assumed at 40,907, and the latter at 51,134. The sum total in 28 Sidereal complexes must be 1461·025 443 × 28, or

[1] Fasti Cath. i. 496 sqq. Introduction to the Tables, 142 sqq.

40,908·712 404, and in 35, must be 1461·025 443 × 35, or 51,135·890 505, the former of which might be assumed at 40,909, and the latter at 51,136.

x. It is manifest too that, as there is no interruption in the continuity of these Complexes through both these Periods, each succeeding one beginning where the preceding of its proper kind ended, these 28 Complexes in Period i, and those 35 in Period ii, taken together, form a continuous Period of Noctidiurnal time in the first of these successions, and of Annual, in the sense of Tropical, in the second, and of Annual, in the sense of Sidereal, in the third. It is manifest also that, while these 28 or these 35 Complexes in col. A compose an unbroken succession of Annual time in the sense of the interval between the mean Vernal ingress in one instance and the mean Vernal ingress in the next to it, they do not constitute a continuous period of Annual time in the sense of one complete revolution from a given point in the orbit of the earth to the same again perpetually. The sum total of Annual time in this sense is the sum of these Complexes in col. C; and the measure of the defect of the sum of Annual time in the former sense on the same sum in the latter in both these Periods is the Recession of mean Tropical time on mean Sidereal, through one of these Complexes after another, in col. D; a difference, which at the rate of 1 h. 21 m. 16·669 819 sec. in each, carried on to A. M. 6049, A. D. 2045, the last year of our Tables, and the Ingress of Period xlix, would be found to have accumulated to

$\overline{\text{1 h. 21 m. 16·669 819 sec.}} \times 1512$,

or 85 d. 8 h. 12 m. 4·766 328 sec.

And by this amount must the 6049th mean Tropical Ingress be found to anticipate on the 6049th mean Sidereal one; and by parity of reason the 6049th mean Natural year, in the sense of complete revolutions of the seasons, on the 6049th, in the sense of complete circumferences.

xi. It is manifest also that this standing defect of mean Annual time in the sense of the revolution of the seasons, on mean Annual in the sense of complete circumferences, is made up to the former by the decursus of Annual time in that sense itself; i. e. this standing difference of 1 h. 21 m.

16·669 819 sec. of mean solar time, by which the first Tropical Complex in col. A falls short of the first Sidereal one in col. C, though not taken into the account of annual Tropical time in this first Tropical Complex, is so in the next; the first hour, 21 min. and 16·669 819 sec. of the second Tropical Complex being this very difference itself. And in like manner, the difference which, as we have shewn, must be found existing at the end of 1512 Complexes of each description, 85 d. 8 h. 12 m. 4·766 328 sec., though no part of the 6018 Tropical years elapsed up to that time, would be the first 85 d. 8 h. 12 m. 4·766 328 sec. of the 6019th; the addition of which to the sum of mean solar time in the former would equate the decursus of mean Annual time in the sense of the revolution of the seasons, up to the 6019th such year, to the sum of mean Annual in the sense of complete circumferences, up to the 6019th of that too. And on this principle it is that 25,885 mean Tropical years, or revolutions of the seasons, must ultimately be found to be equal to 25,884 mean Sidereal, or so many complete circumferences [m].

xii. And though it may seem at first sight as difficult to represent to the senses, as it is easy to conceive mentally, the idea of a fixed and invariable point in such a circle as the Ecliptic, (the terminator of one complete circumference, and the epoch of another perpetually,) yet if it may be assumed that the first such point was designated by the intersection of the plane of the Ecliptic and that of the Equator at the beginning of the present system of things, and that first intersection was the Primary mean Vernal Ingress of the system, and the date of that Primary Ingress the first day of the Mosaic Hexaëmeron, and the Julian style of that day April 25, A. M. 1, B. C. 4004, then, as we have before had occasion to explain [n], the locus even of such a fixed point as we are supposing was as plainly exhibited to the eye, at that time, by the position of the two stars Βῆτα and Ζῆτα Tauri, as it could have been imagined by the mind for itself. So that, as the epoch of the mean Annual time of the present system

[m] See our Fasti Cath. iv. 146, 147, and supra, note, p. xxxii.

[n] Fasti Cath. iii. 250. 258. Introduction to the Tables, &c. 241.

of things ever after, both in the sense of the revolution of the seasons, and in that of the description of complete circumferences, nothing could have been better adapted than this Primary mean Vernal Ingress; and it must be true to say that mean Annual time in the sense of complete revolutions of the seasons, and mean Annual in that of complete circumferences, having both set out in the first instance from the point of this Primary mean Vernal Ingress, if the former has receded on this point ever since, and the latter has continued attached to it, the former has receded on itself, as much as on the latter, perpetually.

xiii. It has been explained that, as the sum of the Hebdomadal epact in a Noctidiurnal complex of 1461 days and nights is *five*, the *feria* of origination of the first such complex being supposed the *feria prima* at midnight, that of the second must be the *feria sexta* at midnight, that of the third the *feria quarta*; and so on, five terms, in the order of *feriæ*, at the Ingress of each succeeding complex in advance of the *feria* of Ingress of the one before it. And this being necessarily the march of a Noctidiurnal unit of this kind from cycle to cycle in the order of *feriæ*, that of a Tropical, and that of a Sidereal one, each supposed to have set out with the Noctidiurnal, and to have accompanied it ever after, *mutatis mutandis*, must be analogous to it. That is, Tropical time receding, and Sidereal advancing, on the point of midnight, at a certain rate perpetually, yet neither more than 24 hours in the course of one of our Periods; the Tropical unit, in every cycle after the first, must be found entering at such and such a time from midnight on the *feria* next before that of the Noctidiurnal, and the Sidereal at such and such a time in advance of midnight on the same *feria* as the Noctidiurnal.

When therefore we come down to the last cycle of each of these Complexes in the first of our Periods, the 109th year of our Tables, the xxviiith Noctidiurnal unit at this particular time being found entering the common succession on the *feria* 3ª at midnight, it is only agreeable to the analogy of every cycle, and of each kind, through the Period before, that the xxviiith Tropical one should be assumed to be entering at the same time at 3 h. 55 m. 4·8 sec. from midn. on the *feria* 2^a, and the xxviiith Sidereal one at 16 h. 29 m. 34·885 113 sec. in advance of midnight on the *feria* 3^a.

And this being the last of each kind which can enter this first Period, the question is now, Whether this xxviiith Noctidiurnal complex in particular is to be reckoned as a complex or unit of 1461 days and nights, like all before it, or as one of 1460? If it is still to be treated as one of 1461, the sum of the epact at the end of this too will be *five*, and the *feria* of ingress of this *last* cycle of Period i. having been the *feria* 3^a at midn. that of the *first* of Period ii. must be the *feria* $3+5$, or *feria* 1^a at midnight. If this in particular is now to be reckoned a complex of 1460, (one less than all before it,) then the epact at the end of this will be *four*, and the *feria* of ingress of *this* cycle having been the *feria* 3^a at midn. that of the next (the first of Period ii.) will be the *feria* $3+4$, the *feria* 7^a, at midnight.

And such being the possible distinction in the reckoning of the last of the Noctidiurnal complexes in this first Period, compared with that of all before it, the next question is, What difference will such a distinction make to the reckoning of the Tropical and the Sidereal, going on to the end of the Period parallel to the Noctidiurnal? In answer to which, the inspection of the Table itself will shew that, whichever of these modes of reckoning the Noctidiurnal complex in this last cycle of the Period be adopted, it will make no difference to the Recession of the Tropical, or to the Advance of the Sidereal, ingress on the point of midnight through this last cycle, as much as through any before it—which will go on just the same in either case. It will make no difference to the relation of these Ingresses *inter se*. The distance between them at the end of this last cycle of each will be just the same in either case. And if the Julian style which we have annexed to all these Ingresses may be assumed to have belonged to them from the first, the distinction in question will make no difference to the particular style of the particular Ingress in any of these cases. If the proper style of the last Noctidiurnal complex of the Period is April 25 at midn. that of the first of the next will be April 25 at midnight too. If the proper style of the last Tropical one cyclically reckoned is April 24, at 3 h. 55 m. 4·8 sec. from midn. that of the next will be

April 24, at 3 h. 10 m. 26·4 sec. from midnight. If the proper Julian style of the last Sidereal complex is April 25, at 16 h. 29 m. 34·885 113 sec. from midnight, that of the next will be April 25, at 17 h. 6 m. 13·154 932 sec. from midnight.

In short, it will make no difference in any of these cases, except to the FERIA of INGRESS. If this last Noctidiurnal Complex in the Period is reckoned at 1461 days, the first of the next Period will enter on the *feria* 1ª at midnight, and its Julian style will be April 25, the *feria* 1ª at midnight. The next Tropical one will enter at 3 h. 10 m. 26·4 sec. from midnight on the *feria* next before that of the first Noctidiurnal one, and its Julian style, cyclically reckoned, will be April 24, the *feria* 7ª at midnight. The next Sidereal one will enter at 17 h. 6 m. 13·154 932 sec. in advance of midnight, on the *feria* 1ª, and its Julian style, cyclically reckoned, will be April 26, the *feria* 2ª at midnight.

If this last Noctidiurnal Complex in Period i is reckoned at 1460 days, the next in order, the first of Period ii, will enter the succession on the *feria* 7ª at midnight, and its Julian style will be April 25, the *feria* 7ª at midnight. The next Tropical one will enter at 3 h. 10 m. 26·4 sec. from midnight on the *feria* next before this, and its Julian style, cyclically reckoned, will be April 24, the *feria* 6ª at midnight. The next Sidereal one will enter at 17 h. 6 m. 13·154 932 sec. in advance of midnight on the *feria* 7ª, and its Julian style, cyclically reckoned, will be April 26, the *feria* 1ª at midnight.

These different results to the parallel reckoning of Noctidiurnal and Tropical and Sidereal time, *through* the first of our Periods *into* the second, according as the last Noctidiurnal Complex in particular is treated as one of 1461, or as one of 1460, days, *mutatis mutandis*, are equally true of the same reckoning, continued through the second Period into the third, according as the last Noctidiurnal Complex in that too is treated as one of 1461 days, or as one of 1460. And forasmuch as what would thus be seen to hold good of three such parallel successions, digested in cycles of this kind, through the first two Periods of our Fasti, might easily be shewn to hold good of the same kind of succession and the same kind of digest, to the end of our Tables; let us bring these explanations to a point, by reminding the reader that the distinction of administration thus supposed between the last Noctidiurnal Complex in each of these first two of our Periods, and every one before the last, is exactly that which prevails in our Tables in general from Period i. A. M. 1, B. C. 4004, to Period xxxv, A. M. 4229, A. D. 225, and from the ingress of this Period to the end of the Tables, respectively. Each of our Periods contains a certain number of Noctidiurnal Complexes, (such as we have been supposing in these first two of the number) either 28, or 35, or 14, according to the length of the Period, 112, or 140, or 56 years; and each of these in each of our Periods, from the first inclusive to the last but one exclusive, is reckoned and administered as one of 1461 Noctidiurnal cycles. The last only is differently reckoned, before the Ingress of Period xxxv; viz. as a complex of 1460 days, unlike any before it, instead of one of 1461, like all the rest.

Such is the difference *de facto* existing in the administration of the Noctidiurnal, including the Hebdomadal, time of our Tables before and after the ingress of Period xxxv. Yet real as it is *per se*, the preceding comparison of the succession of Noctidiurnal, Tropical, and Sidereal time through the first two Periods of our Fasti is competent to shew it affects no essential property, character, or relation of these several successions either in themselves, or as referrible to each other—neither the general succession of Noctidiurnal time, or the particular one of Hebdomadal, both which go on in the same way before and after Period xxxv; nor the tendency of the Tropical succession to recede on the Noctidiurnal, or that of the Sidereal to advance on it, in the same way and at the same rate, before and after Period xxxv; nor the relation of these two to each other, before and after this Period also; nor even the Julian style of these three successions in common, supposed to have been the same at first, and ever after deducible in the case of each from what it was at first.

In short, it makes no difference to any thing but the Hebdomadal style of this same Julian term, at the Ingress of each of our Periods before and after Period xxxv respectively. In the simple Noctidiurnal succession this term, continuing the same with itself, April 25 perpetually—before the

Ingress of this Period drops one term in the order of the Hebdomadal cycle from Period to Period, first from April 25 the *feria* 1ª to April 25 the *feria* 7ª, then from April 25 the *feria* 7ª to April 25 the *feria* 6ª, and so forth, after the ingress of Period xxxv, continuing the same itself at the beginning of every Period, April 25, it continues the same also in the order of *feriæ*, the feria 2ª. In the Tropical, before the ingress of this Period, dropping one term in the order of the Julian notation, from Period to Period, it drops two terms in the order of *feriæ*, first from April 25 the *feria* 1ª to April 24 the *feria* 6ª, then from April 24 the *feria* 6ª to April 23 the *feria* 4ª, and so on; after the ingress of this Period, dropping one term still in the order of the Julian notation, from Period to Period, it drops one term only in the order of feriæ also. In the Sidereal, before the same Ingress, cyclically reckoned, it rises one term in the order of the Julian notation, from Period to Period—from April 25 to April 26, from April 26 to April 27, and so on—and two terms in the order of *feriæ*, reckoned from the Tropical ingress: after Period xxxv it rises one term, from Period to Period, in the order of the Julian notation, and one in the order of *feriæ* reckoned from the Noctidiurnal ingress, and two reckoned from the Tropical.

If then the question be asked, Why the administration of our Tables should follow a different rule before and after A. D. 225 respectively; it might reasonably be answered that there *is* no difference in its rule before and after this point of time, except *per accidens*. The same system of Annual time runs through Noctidiurnal and Hebdomadal, and in the same way, both before and after A. D. 225. But the true answer to such a question after all is *this;* That a scheme of Noctidiurnal and Hebdomadal time, like that which we have exhibited in this Table G, is to all intents and purposes a Julian one of its kind. These Complexes, or units, of 1461 days and nights perpetually, are the cycle of the Julian leap-year and leap-day, the sum of three years of 365 days and nights in length, and of a fourth of 366. And, what is more, as thus digested and proposed in our Tables, from first to last, they are the Julian cycle of this kind, which is in use at the present day, whether as carried back to the beginning of things, or as brought down from the beginning of things.

Now to carry back the Julian cycle of leap-year and the leap-day to the beginning, and to apply it to the actual measurement of Noctidiurnal and Hebdomadal time from the beginning downwards as much as at the present day, would be to commit the practical absurdity of treating that as a reality, and *de facto* in use and operation from the very first day of the Mosaic Hexaëmeron, which no one in his senses could seriously suppose to have come into actual existence before B. C. 45 at the earliest, nor even, (as something the same with that Type and Succession of Noctidiurnal, Hebdomadal, and Annual time, which is going on in a certain way at present, or was so down to the date of the Gregorian Correction,) before A. D. 225; as we have abundantly demonstrated in the fourth volume of our Origines Kalendariæ Italicæ, by the particular proofs of the fact, from B. C. 45 to A. D. 225, and summarily even in the preceding sections of these Prolegomena *.

* So long as Annual time in the sense of Julian has no actual existence, and is merely assumed to have such an existence in the form of Annual Tropical, treated *pro tempore* as Julian; the reason of things requires that a given Julian Type, as soon as it becomes excessive in comparison of what it is supposed to represent, (i. e. begins to contain one period of 24 hours more than the same number of Tropical years,) should be corrected. And this excess being supposed to attain to its prescribed limit in the course of each of our Periods, the proper time for applying the correction is the end of one of these Periods, and the beginning of the next; and the proper mode of the application is the abstraction of one day from the sum which would otherwise be contained in the Annual Julian time of the Period. This is sufficient to explain why, while Annual Julian time was still *de facto* only the conventional representative of Annual Tropical, the last four years of each of our Julian Periods must be *de facto* a complex of 1460 days and nights, instead of 1461.

Moreover the proportion of mean Annual Tropical time of the standard of our Fasti to mean Annual Julian being such that the former must recede on the latter one period of 24 hours in 129 years of both kinds, and, by the cyclical rule of our Tables, may be assumed to do so in 112 or 140; it is only agreeable to this proportion that both kinds of time having set out together at the beginning of one of our Periods at midnight on the *feria prima*, if Julian time in particular, at the beginning of the next, for any reason whatsoever, is found to be entering at midnight on the *feria septima*, Natural Annual just at the same moment should be found entering at midnight on the *feria sexta*. But in order to explain how this really comes to pass, and that it is only the necessary consequence of the decursus of Noctidiurnal and Hebdomadal time in Annual, in the sense of Tropical treated *pro tempore* as Julian, we may begin with observing, That, as the ultimate measure of the Noctidiurnal cycle is the period of 24 hours of mean solar time, and the ultimate measure of the Hebdomadal cycle is the Noctidiurnal, nothing can be taken into account in the reckoning of either, *per se*, or continuously, except the *integral* period of 24 hours, dated perpetually from the *same* epoch of the Noctidiurnal revolution. And this being assumed as the law of the reckoning of Noctidiurnal and Hebdomadal time under *all* circumstances; then, forasmuch as the law of the decursus or march of Annual time in the sense of Tropical, as we have abundantly explained in the preceding sections, is that of Recession on a fixed point of the Noctidiurnal revolution at a certain rate every year perpetually, it will follow from these two facts laid together, that to reckon the succession of Noctidiurnal and Hebdomadal time, in Natural-Annual, according to the first and most invariable of its conditions, from the same point of the Noctidiurnal revolution, and yet from the head of the Natural year, perpetually, must be simply an impossibility. And it will follow from this impossibility that, if Noctidiurnal and Hebdomadal time are to be reckoned in terms of Natural-Annual, according to their proper law, the epoch of Natural-Annual time itself must be treated as stationary for a time at least, in terms of Noctidiurnal and Hebdomadal; and the only question can be, How long an assumption of this kind, so contrary to the necessary tendencies of the march of Annual time in the sense of Natural, in comparison of that of Noctidiurnal or Hebdomadal, may be treated as matter of fact?

In answer to this question, we observe that, as it is the *natural* law of Annual time in the sense of Julian to return to the same relations to Noctidiurnal and Hebdomadal every 28 years, the *positive* or *conventional* law of Natural-Annual itself, treated *pro tempore* as Julian, may without impropriety be assumed to be to return to the relations of origination in terms of Noctidiurnal and Hebdomadal for one such Period of 28 years at least. And if the actual amount of the recession of Annual time in the sense of Natural, on a given point of the Noctidiurnal revolution, even at the end of one of these Periods cannot exceed six hours, or a quarter of the Period of 24 hours, even at the end of the first of these Periods of 28 years, it may still be considered too small to be taken into account in the proper reckoning of Noctidiurnal and Hebdomadal time in terms of Annual in the sense of Natural; and everything may be allowed to go on in the reckoning of all these forms of time, both individually and conjointly, subject to the same assumptions as before, for another of these Periods at least.

But with the ingress of the third cycle of 28 years, when the epoch of the Annual succession in the sense of the Natural, by virtue of its inherent tendency to recede on a fixed point of the Noctidiurnal revolution more and more the longer it goes on, has been brought from the point of midnight to the point of noon—it makes all the difference between an Annual succession merely treated as Julian *pro tempore,* and an actual Julian one, whether the proper Noctidiurnal and Hebdomadal time of such an Annual succession, from this period of its decursus along with the other two, shall still be allowed to go on, according to the same assumptions as before, or not. In the reckoning of Noctidiurnal and Hebdomadal time in a simply Julian succession of Annual, the same assumptions must still hold good, the same rule of reckoning must still be observed, from one of these cycles of 28 years to another perpetually. Annual time in the sense of Julian having begun to be reckoned in terms of Noctidiurnal and Hebdomadal in the first year of one of these cycles, from a given point of the Noctidiurnal revolution, and on a given *feria* reckoned from that point, must continue to be reckoned from the same point and the same *feria* in the first year of every subsequent cycle of the same kind perpetually. But in the case which we are considering at present, that of an Annual succession, merely treated conventionally as Julian, and as only *pro tempore* amenable to the proper Julian law of the reckoning of Noctidiurnal and Hebdomadal time in terms of Annual, it would manifestly be contrary to the reason of things to be still reckoning the *first* Noctidiurnal cycle, the first Hebdomadal *feria*, the first period of 24 hours in such an Annual succession, from the point of midnight, when it is actually falling at the point of noon. The necessity of the case requires that the rule, which has hitherto regulated the proper Noctidiurnal and Hebdomadal reckoning of such an annual succession, should now be modified. And though we are not free, even at this period of the succession, to make a change in the epoch of the Noctidiurnal revolution, hitherto observed, from midnight to noon, we are free to make a change in the epoch of the Hebdomadal cycle, which may be reckoned from midnight on one *feria,* as much as from midnight on another.

And this is evidently the change required by the circumstances of the case, when the head of the Annual succession, which is or ought to be also the head of its proper Noctidiurnal and proper Hebdomadal succession perpetually—and was so, when all began to proceed together at first—has now got midway between the *feria* of origination, and the *feria* next before it; viz. not a change in the epoch of the Noctidiurnal time of the succession from midnight to noon, but a change in the epoch of the Hebdomadal, from midnight on the *feria* of origination to midnight on the *feria* next before it. It is clear that when the head of the Annual succession is now *de facto* at an equal distance from both these points, there is just the same reason apparently to reckon its proper Noctidiurnal and Hebdomadal time from the latter as from the former; and when we consider that all this time the actual tendency of the Annual succession has been and still is to recede more and more from the former, and to approach nearer and nearer to the latter, every year, it will appear in reality much more reasonable, from this time forward, to reckon its proper Noctidiurnal and Hebdomadal time from the point of midnight, to which it is approach-

The substance then of what we have said, or what we desired to say, on these points is *this;* The three different Complexes, which we have been comparing together in this Table G, being called the Tropical, the Noctidiurnal, and the Sidereal, respectively, and the cycle of day and night and cycle of *feriæ* being supposed to have run through them all in the same way from the first, and for the purpose of discriminating and distinguishing asunder the numerical units of both these cycles, as running alike through all of them perpetually, the proper style of the Julian calendar having been applied to each of these complexes from the first—this

ing nearer and nearer, than from the point of midnight, from which it is receding further and further, every year.

The sum and substance of this explanation is that, in reckoning the proper Noctidiurnal and Hebdomadal time of one of our Natural-Julian Periods, an equal regard must be paid to each of two seemingly inconsistent conditions; one, the necessary fixedness of the epoch of the Noctidiurnal succession; the other, the necessary moveableness of that of the Annual. And the only positive rule, by which these conditions can be reconciled together, and an equal regard can be paid to each, is *this*, of reckoning the proper Noctidiurnal and Hebdomadal succession of such an Annual one, for the first half of the Period from the epoch of midnight on the *feria* of origination, and for the second half from the epoch of midnight on the *feria* next before it. And though an error of assumption is necessarily involved in the rule itself, a cyclical rule is compatible with an error of application, which does not exceed certain limits. It is sufficient that, as applied to the first half of one of our Periods, the rule which we are laying down begins with being strictly true, though it ends with being in defect of the truth; and in its application to the second, it ends with being strictly true, though it begins with being in anticipation of the truth.

To apply this to the case of the first of our Periods—that which we have hitherto been explaining in Table G—though the first 2922 weeks of this period were reckoned continuously from the *feria prima* at midnight—the second 2922, on the principle just laid down, will be reckoned from the *feria septima* at midnight; and the last of these second 2922 weeks being necessarily a week of six days only, if the first term of that week enters the Noctidiurnal succession of the Annual time of the Period, in the last year of this description, at midnight on the *feria septima*, the sixth must do so at midnight on the *feria quinta*, and the first day and first week of the next Natural or Tropical year, (the first year of Period ii) must enter the Noctidiurnal and Hebdomadal succession of that second Natural Julian Period, at midnight on the *feria sexta*—which was what we undertook to explain.

Julian style of the cycle of day and night, or of the *feriæ* of the Hebdomadal cycle down to A. D. 225, is first and properly that of the Tropical, secondarily and through this, that of the Noctidiurnal and the Sidereal; after A. D. 225, it is first and properly that of the Noctidiurnal, secondarily and through this, that of the Tropical and that of the Sidereal. And Annual Tropical time, as the cycle of the seasons and of natural production, being at all times the natural Annual cycle of the present system of things, and as treated *pro tempore* as Julian, in the manner in which it is treated in our Tables, down to the introduction of the actual Julian year in the shape of the correction of the Dictator Cæsar, coincident with the xxxvth Type of the Natural and Julian time of our Fasti, being the true civil or conventional Annual cycle of the existing system of things also—this is what was intended by our assertion supra[o], that Annual time, down to A. D. 225, gave the law to Noctidiurnal in the use of a common nomenclature for the parts of each; and after A. D. 225, Noctidiurnal gave the law in the same respect to Annual. That is, down to A. D. 225, from the first, the Noctidiurnal cycle borrowed its proper Julian style from that of the Annual; ever since A. D. 225 the Annual has borrowed its proper Julian style from that of the Noctidiurnal. Down to A. D. 225, the first and proper meaning of a given Julian term, in the regular order of the Julian notation, was its place in the order of the Annual cycle in the sense of the Natural, treated *pro tempore* as Civil. Ever since A. D. 225 it is its place in the order of the Noctidiurnal and the Hebdomadal cycle, and through that in the order of the Annual.

To proceed then, in the last place, to the proposed representation of the mean annual Sidereal time of our Fasti along with the mean annual Tropical, in a compendious form.

It is very observable that, as the difference of the mean Tropical year of our Fasti and the mean Julian amounts as nearly as possible to one entire period of 24 hours in 129 years of both kinds, so that of the mean Julian and the mean Sidereal amounts as nearly as possible to one entire period of

o Section vi. pag. xlv: sect. x. lxxiv.

24 hours in 157 years of both kinds*; and between the period of 157 and that of 129 the difference is just the solar cycle of 28 years.

It is manifest therefore that as, in adapting the mean Annual Tropical time of our Tables to the mean Annual Julian perpetually, we have made use of a cyclical form of the period of 129 years, sometimes of 112 years, sometimes of 140, but each of them a perfect measure of the cycle of 28 years; so, with a view to a similar adjustment of mean Julian time to mean Sidereal, we might make use of a cyclical form of the period of 157 years, at one time 140 years long, at another 168, each of them however a multiple of the cycle of 28.

We shall therefore subjoin two Schemes of the mean Sidereal time of our Fasti, one of them digested in Periods of 112, 140, or 56 years respectively, the other in Periods of 140, 168, or 84.

* *Supplementary Tables: Table xxxvii.*

Precession of Sidereal on Julian.

Sidereal	Julian	h.	m.	s.
100	100 years	15	15	56·745 480
50	50	7	37	58·372 740
7	7	1	4	6·972 183
157	157	23	58	2·090 403

Only 1 m. 57·909 597 sec. less than 24 hours.

SECTION XVIII.—*Synopsis of mean Annual Tropical, and of mean Annual Sidereal, Time in the Period of* 112, 140, *or* 56 *years, from A. M.* 1, *B. C.* 4004, *to A. M.* 6049, *A. D.* 2045.

TABLE H.

				A.				B.				C.	D.	
				TROPICAL INGRESS.				SIDEREAL INGRESS.				RECESSION of the TROPICAL on the SIDEREAL INGRESS.	JULIAN INGRESS.	
Period.	A. M.	B. C.	Length in yrs.		h. m. s.	D. L.	Feria.		h. m. s.	Cyclical.	Feria	d. h. m. s.		Feria.
i	1	4004	112	April 25	0 0 21·6	C	1	April 25	0 0 21·600 000	April 25	1	0 0 0 0·000 000	April 25	1
ii	113	3892	140	24	3 10 26·4	D	6	25	17 6 13·154 937	26	1	1 13 55 46·754 937		7
iii	253	3752	112	23	1 8 2·4	E	4	26	14 28 32·598 609	27	1	3 13 20 30·198 609		6
iv	365	3640	140	22	4 18 7·2	F	2	27	7 34 24·153 546	28	1	5 3 16 16·953 546		5
v	505	3500	112	21	2 15 43·2	G	7	28	4 56 43·597 218	29	1	7 2 41 0·397 218		4
vi	*617	3388	140	20	5 25 48·0	A	5	28	22 2 35·152 155	29	7	8 16 36 47·152 155		3
vii	*757	3248	140	19	3 23 24·0	B	3	29	19 24 54·595 827	30	7	10 16 1 30·595 827		2
viii	897	3108	112	18	1 21 0·0	C	1	30	16 47 14·039 499	May 1	7	12 15 26 14·039 499		1
ix	1009	2996	140	17	4 31 4·8	D	6	May 1	9 53 5·594 436	2	7	14 5 22 0·794 436		7
x	1149	2856	112	16	2 28 40·8	E	4	2	7 15 25·038 108	3	7	16 4 46 44·238 108		6
xi	1261	2744	140	15	5 38 45·6	F	2	3	0 21 16·593 045	3	6	17 18 42 30·993 045		5
xii	*1401	2604	140	14	3 36 21·6	G	7	3	21 43 36·036 717	4	6	19 18 7 14·436 717		4
xiii	*1541	2464	112	13	1 33 57·6	A	5	4	19 5 55·480 389	5	6	21 17 31 57·880 389		3

[illegible]	[illegible]	1820	112	8	1 46 55·2	F	2	8	21 24 36·921 279	9	5	30 19 37 41·721 279	5
xix	2297	1708	140	7	4 57 0·0	G	7	9	14 30 28·476 216	10	5	32 9 33 28·476 216	4
xx	2437	1568	56	6	2 54 36·0	A	5	10	11 52 47·919 888	11	5	34 8 58 11·919 818	3
xxi	*2493	1512	140	5	16 29 38·4	B	3	10	20 25 43·697 357	11	4	35 3 56 5·297 357	2
xxii	2633	1372	112	4	14 27 14·4	C	1	11	17 48 3·141 029	12	4	37 3 20 48·741 029	1
xxiii	*2745	1260	140	3	17 37 19·2	D	6	12	10 53 54·695 966	13	4	38 17 16 35·495 966	7
xxiv	*2885	1120	140	2	15 34 55·2	E	4	13	8 16 14·139 638	14	4	40 16 41 18·939 638	6
xxv	3025	980	112	1	13 32 31·2	F	2	14	5 38 33·583 310	15	4	42 16 6 2·383 310	5
xxvi	3137	868	140	March 31	16 42 36·0	G	7	14	22 44 25·138 247	15	3	44 6 1 49·138 247	4
xxvii	3277	728	56	30	14 40 12·0	A	5	15	20 6 44·581 919	16	3	46 5 26 32·581 919	3
xxviii	3333	672	140	30	4 15 14·4	B	4	16	4 39 40·359 388	17	3	47 0 24 25·959 388	2
xxix	3473	532	112	29	2 12 50·4	C	2	17	2 1 59·803 060	18	3	48 23 49 9·403 060	1
xxx	*3585	420	140	28	5 22 55·2	D	7	17	19 7 51·357 997	18	2	50 13 44 56·157 997	7
xxxi	3725	280	140	27	3 20 31·2	E	5	18	16 30 10·801 669	19	2	52 13 9 39·601 669	6
xxxii	3865	140	112	26	1 18 7·2	F	3	19	13 52 30·245 341	20	2	54 12 34 23·045 341	5
xxxiii	3977	28	140	25	4 28 12·0	G	1	20	6 58 21·800 278	21	2	56 2 30 9·800 278	4
		A. D.											
xxxiv	4117	113	112	24	2 25 48·0	A	6	21	4 20 41·243 950	22	2	58 1 54 53·243 950	3
xxxv	*4229	225	140	23	5 35 52·8	B	4	21	21 26 32·798 887	22	1	59 15 50 39·998 887	2
xxxvi	*4369	365	140	22	3 33 28·8	B	3	22	18 48 52·242 559	23	2	61 15 15 23·442 559	2
xxxvii	4509	505	112	21	1 31 4·8	B	2	23	16 11 11·686 231	24	3	63 14 40 6·886 231	2
xxxviii	4621	617	140	20	4 41 9·6	B	1	24	9 17 3·241 168	25	4	65 4 35 53·641 168	2
xxxix	4761	757	112	19	2 38 45·6	B	7	25	6 39 22·684 840	26	5	67 4 0 37·084 840	2
xl	4873	869	140	18	5 48 50·4	B	6	25	23 45 14·239 777	26	5	68 17 56 23·839 777	2
xli	*5013	1009	140	17	3 46 26·4	B	5	26	21 7 33·683 449	27	6	70 17 21 7·283 449	2
xlii	*5153	1149	112	16	1 44 2·4	B	4	27	18 29 53·127 121	28	7	72 16 45 50·727 121	2
xliii	5265	1261	140	15	4 54 7·2	B	3	28	11 35 44·682 058	29	1	74 6 41 37·482 058	2
xliv	5405	1401	140	14	2 51 43·2	B	2	29	8 58 4·125 730	30	2	76 6 6 20·925 730	2
xlv	5545	1541	112	13	0 49 19·2	B	1	30	6 20 23·569 402	31	3	78 5 31 4·369 402	2
xlvi	5657	1653	140	12	3 59 24·0	B	7	30	23 26 15·124 339	31	3	79 19 26 51·124 339	2
xlvii	*5797	1793	112	11	1 57 0·0	B	6	31	20 48 34·568 011	June 1	4	81 18 51 34·568 011	2
xlviii	5909	1905	140	10	5 7 4·8	B	5	June 1	13 54 26·122 948	2	5	83 8 47 21·322 948	2
xlix	6049	2045		9	3 4 40·8	B	4	2	11 16 45·566 620	3	6	85 8 12 4·766 620	

TABLE I.

Synopsis of mean Annual Sidereal Time in the Period of 140, *and* 168, *or* 84 *years, from A. M.* 1, *B. C.* 4004, *to A. M.* 6105, *A. D.* 2101.

				SIDEREAL INGRESS.			CYCLICAL EPOCH.	
Period	A. M.	B. C.	Length in yrs.			D. L.		Midn.
					h m. s.			
i	1	4004	140	April 25	0 0 21·600 000	C	April 25	Feria 1
ii	141	3864	168	25	21 22 41·043 672	D	26	1
iii	309	3696	140	26	23 1 28·376 078	E	27	1
iv	449	3556	168	27	20 23 47·819 750	F	28	1
v	*617	3388	140	28	22 2 35·152 156	A	29	7
vi	*757	3248	168	29	19 24 54·595 828	B	30	7
vii	925	3080	168	30	21 3 41·928 234	C	May 1	7
viii	1093	2912	140	May 1	22 42 29·260 640	D	2	7
ix	1233	2772	168	2	20 4 48·704 312	E	3	7
x	*1401	2604	140	3	21 43 36·036 718	G	4	6
xi	*1541	2464	168	4	19 5 55·480 390	A	5	6
xii	1709	2296	140	5	20 44 42·812 796	B	6	6
xiii	1849	2156	168	6	18 7 2·256 468	C	7	6
xiv	2017	1988	168	7	19 45 49·588 874	D	8	6
xv	*2185	1820	140	8	21 24 36·921 280	F	9	5
xvi	2325	1680	168	9	18 46 56·364 952	G	10	5
xvii	*2493	1512	84	10	20 25 43·697 358	B	11	4
xviii	2577	1428	168	11	9 15 7·363 561	B	12	5
xix	*2745	1260	140	12	10 53 54·695 967	D	13	4
xx	*2885	1120	168	13	8 16 14·139 639	E	14	4
xxi	3053	952	140	14	9 55 1·472 045	F	15	4
xxii	3193	812	168	15	7 17 20·915 717	G	16	4
xxiii	3361	644	84	16	8 56 8·248 123	B	17	3
xxiv	3445	560	140	16	21 45 31·914 326	B	17	3
xxv	*3585	420	168	17	19 7 51·357 998	D	18	2
xxvi	3753	252	140	18	20 46 38·690 404	E	19	2
xxvii	3893	112	168	19	18 8 58·134 076	F	20	2
		A. D.						
xxviii	4061	57	168	20	19 47 45·466 482	G	21	2
xxix	*4229	225	140	21	21 26 32·798 888	B	22	1
xxx	*4369	365	168	22	18 48 52·242 560	B	23	2
xxxi	4537	533	168	23	20 27 39·574 966	B	24	3
xxxii	4705	701	140	24	22 6 26·907 372	B	25	4
xxxiii	4845	841	168	25	19 28 46·351 044	B	26	5
xxxiv	*5013	1009	140	26	21 7 33·683 450	B	27	6
xxxv	*5153	1149	168	27	18 29 53·127 122	B	28	7
xxxvi	5321	1317	168	28	20 8 40·459 528	B	29	1
xxxvii	5489	1485	140	29	21 47 27·791 934	B	30	2
xxxviii	5629	1625	168	30	19 9 47·235 606	B	31	3
xxxix	*5797	1793	140	31	20 48 34·568 012	B	June 1	4
xl	5937	1933	168	June 1	18 10 54·011 684	B	2	5
xli	6105	2101		2	19 49 41·344 090	B	3	6

That the first of these Tables is a correct representation of the recession of the mean Tropical time of the Fasti on the mean Sidereal, from the beginning to the end of the Table, may be shewn of the whole at once, by the following summary process.

The entire number of years of both kinds in this Table being 6048,

		d.	h.	m.	s.
In 6008 mean Tropical years the recession of mean Tropical time on mean Sidereal [p]	=	84	15	56	44·728 790
In 40	=		13	32	46·698 192
8	=		2	42	33·339 638
In 6048	=	85	8	12	4·766 620
A.M. 6049, Mean V. Equinox of the Tables, continued so far *	March	9	3	4	40·8
		94	11	16	45·566 620
		−92			
Table H, Per. xlix. 6049th Sidereal Ingress,	June	2	11	16	45·566 62

And that the second is an equally correct representation of the advance of the mean Sidereal time of the Fasti on the mean Julian, may be summarily proved in like manner, as follows.

The number of years of both kinds being 6104, we have [q],

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* A. M. 6004, A. D. 2040.

		h.	m.	s.
Tabular Mean V. Equinox	March 7	5	15	21·6
Add		5	48	50·4
A. M. 6005, A. D. 2001, M. V. E.	March 7	11	4	12·0
Correction	+ 2	0	11	31·2
Corrected Mean V. Equinox A. M. 6005, A. D. 2001	March 9	11	15	43·2
+44 +44 Recession		− 8	11	2·4
A. M. 6049 2045 M. V. E.	March 9	3	4	40·8

[p] Introduction to the Tables of the Fasti Catholici. Supplementary Tables, Tab. xxxv. pag. lxxxii. Precession of the mean Sidereal time of the Fasti on the mean Tropical.

[q] Supplementary Tab., Tab. xxxvii. page lxxxiii.

		d.	h.	m.	s.
6000 mean Sid. years, Precession		38	3	56	44·728 790
100			15	15	56·745 480
4				36	38·269 819
6104		38	19	49	19·744 089
Per. i. 1. A. M. 1. B. C. 4004, first mean Sidereal and mean Julian Ingress	April	25	0	0	21·6
		63	19	49	41·344 089
		−61			
Per. xli. 1. A. M. 6105, A. D. 2101, 6105th Sidereal Ingress	June	2	19	49	41·344 089

In other respects, these Tables require little or no explanation, which has not been anticipated in the preceding Sections.

i. It will be observed that, at stated times, (i. e. as often as the sum of the Periods in Table II, 112, 140, or 56 years, and that of those in Table I, 140, 168, or 84, in a particular instance happen to be equal to each other,) the Sidereal Ingresses shewn by both are exactly the same. These cases occur 14 times, and we have marked each of them with an asterisk.

ii. With respect to the Julian style of each of these kinds of time, the Tropical, the Julian, and the Sidereal—in Table II, the style of all in common in the first instance being supposed April 25 at 0 h. 0m. 21·6 sec. from midnight, the Julian (col. D) remains the same in terms from Period to Period, the Tropical (col. A) recedes one term, and the Sidereal (col. B) advances one term, in the order of the Julian notation, on April 25 from Period to Period. And this proportion of these Julian dates of these different ingresses *inter se*, it will be observed, holds good after A. D. 225 as much as before.

iii. With respect to the Hebdomadal style, the sum of mean Noctidiurnal time in the Tropical Period of 112 years, cyclically reckoned, is 40,907 days; the sum of Hebdomadal is 5,843 weeks, 6 days. In the Julian Period of 112 years the sum of the former is 40,908 days, that of the latter is 5,844 weeks. In the Sidereal the sum of the former, cyclically reckoned, is 40,909 days, that of the latter is 5,844 weeks, 1 day. In the Tropical Period of 140 years the sum of Noctidiurnal time is 51,134 days, that of Hebdomadal is 7,304 weeks, 6 days. In the Julian the former is 51,135 days, the latter is 7,305 weeks. In the Sidereal the sum of the former is 51,136 days, that of the latter is 7,305 weeks, 1 day. And so, in proportion, in the Period of 56 years in each case.

As then in the Tropical Period of every length the Hebdomadal style was carried on from one to another through an epact of 6 – 1, or 5, and in the Julian through one of 7 – 1, or 6[r]; so in the Sidereal of every length it must be supposed to be carried on through an epact of 1 – 1, or 0: and consequently while the Hebdomadal style of the Tropical Ingress for every Period after the first recedes two terms on the *feria* of origination, and that of the Julian recedes one, that of the Sidereal remains attached to the same *feria* as at first;—i. e. returns to the *feria* of origination at the ingress of every Period, down to the xxxvth, A. M. 4229 A. D. 225, at least.

This we say is the *theory* of the Hebdomadal style of the Sidereal Ingresses, from the ist to the xxxvth in particular, cyclically reckoned perpetually; though because the Sidereal Period of 112 years contains 6 h. 54 m. 8·4 sec. of mean solar time less than 40,909 days and nights, and the Sidereal Period of 140 contains 2 h. 37 m. 40·5 sec. less than 51,136 days, cyclically reckoned as these Periods are in our Tables, they must in the course of time accumulate an excess of 24 hours, by which the true ingresses will be found anticipating on those of the Table, unless corrected. This case may be observed in Table II, col. B, occurring every five or six Periods, down to Period xxxv; and the *feria* of ingress dropping at such times from the *feria* of origination to the next before it. But the reason of this phenomenon having been explained, it will occasion no perplexity.

After the Ingress of Period xxxv, A. D. 225, the succession of *feriæ* in the Tropical Period beginning to be carried on through an epact of 6, and in the Julian through one of 7, in the Sidereal it must begin to be carried on through an epact of 1. So that, from this time forward, the Hebdomadal style of the Julian Ingresses remaining the same in terms from Period to Period, that of the Tropical recedes one term, and

[r] See supra, pag. lvi.

that of the Sidereal advances one term, relatively to this, from Period to Period also. And the same distinction holding good of the Julian style of each of these Ingresses, viz. that while that of the Julian Ingress remains the same from Period to Period, that of the Tropical recedes one term, and that of the Sidereal advances one term, in the order of the Julian notation, relatively to this, it follows that there is no difference in the relation of mean Annual Tropical time and mean Annual Sidereal in particular to each other, whether before or after A. D. 225. Both having set out at the ingress of the first of our Periods on the same Julian day of the month, and the same *feria* of the Hebdomadal cycle, Tropical is two terms in the order of the Julian notation, and two in the order of *feriæ* behind Sidereal, at the ingress of every Period after the first, to the end of our Tables.

Section XIX.—*On the Decursus of Simple Julian Time, along with the Julian of the Tables, from the first.*

Though no hypothesis of ours, as we intimated supra[s], can anticipate the course of events by making the Julian Correction a reality before its time, yet, as it was not impossible *per se* that the same kind of reckoning of Noctidiurnal and Annual time, which is going on at present, or was so up to the date of the Gregorian Correction, might have come into existence with the Mosaic Creation itself, there can be no objection *a priori* even to such an assumption as *this*—viz. That what was thus obviously a possible contingency was actually matter of fact. And as we now know in what manner even a simple Julian reckoning, if as old as the Julian time of our Tables, must have proceeded along with it perpetually, there could be no difficulty nor uncertainty about the proper mode of representing both in conjunction, as supposed to have begun and proceeded together from the first.

Table K.—Synopsis of the Simple-Julian, the Natural-Julian, and the Positive-Julian, succession of Noctidiurnal, Hebdomadal, and Annual Time through the Tables of the Fasti Catholici.

[s] Pag. cxl.

SECTION XX.—*Observations and Explanations.*

i. The inspection of this Table shews that there is no difference between the succession in column A and that in column AA. Both are Julian, and Julian of the same denomination: as is proved by the Dominical Letters attached to each, and by the proportion of the *feriæ* of one to those of the other perpetually. In like manner, there is no difference between the succession in B and that in BB. Both these too are Julian, and the same kind of Julian; as is shewn here also by the Dominical Letters and the *feriæ* attached to each.

ii. It appears from this Table K, compared with those which were exhibited supra[t], A, B, C, D, and E, that this Julian succession in col. A and AA is a simply Julian one, analogous, only on a larger scale, to that in Table D or C; the characteristic of which, in contradistinction to the proper Julian succession of the Fasti, was that of receding one term in the order of the Julian notation for one in the order of the Noctidiurnal or the Hebdomadal succession, from Period to Period: while these other successions in B and BB, respectively, are the proper Julian succession of the Fasti; the former the Natural-Julian, the characteristic of which was to descend one term in the order of the Julian notation, and two in the order of *feriæ*, from Period to Period; the latter the Positive-Julian, descending one term in the order of *feriæ*, but none in the order of the Julian notation, with the Ingress of every Period.

iii. These successions in A and AA being compared with those in B and BB; these in A and AA being supposed to be simply Julian ones of their kind, those in B and BB, it appears, are the corresponding Gregorian ones. We mean by this, that a simply Julian reckoning of Noctidiurnal, Hebdomadal, and Annual time being assumed to have entered our Tables, along with the first of our Periods, on a given Noctidiurnal, Hebdomadal, and Julian date, April 25, the *feria* 1ª at midnight, B. C. 4004, column A being this simply Julian succession ever after in *one* form, column B is the corresponding Gregorian form; and column AA being the same simply

[t] Pag. lxxvii. lxxviii. xcii.

Julian succession in *another* form, column BB is the corresponding Gregorian in *another* form also.

There can be no doubt of this fact in either of these instances. All these successions begin alike, on the same Julian and the same Hebdomadal date, April 25 the *feria* 1ª at midnight; and though the Julian style of col. A after this is different from that of col. B, and that of AA from that of BB, the *feriæ* of A are the same with those of B, and the *feriæ* of AA with those of BB, perpetually. And as to the difference of styles, in AA and BB it is simply that of the Julian and the Gregorian style of the present day. In A and B it is the same, merely modified. The Julian style in A descends two terms with every Period, and that in B descends only one, but the Hebdomadal style descends alike in each; and the proportion of the Julian style in B to that in A, at the Ingress of every Period after the first, is simply that of a given Gregorian term at such times to the corresponding Julian one, both of them regularly derived from the same Julian epoch, April 25.

iv. It follows from this state of the case that, even if a Julian reckoning had entered our Tables from the first, it must have been indifferent whether it were to be brought down in the form of A and AA, or in that of B and BB. The decursus of such a reckoning in one of these forms might have been nominally different from that in the other; but there could have been no more real difference between them from the first than there is between the Julian and the Gregorian at present.

v. And this being the case, forasmuch as it also appears that this proper Gregorian Type of the Julian succession in A is neither more nor less than the Natural-Julian Type of our own Tables, and the proper Gregorian form of the Julian in AA is neither more nor less than the Positive-Julian of the Tables; it will follow from this fact along with the other that, even had the actual Julian reckoning of the present day come into existence on the very first day of the Hexaëmeron, April 25, the *feria* 1ª at midnight, B.C. 4004, it would have made no difference to its subsequent decursus, whether it had proceeded ever after in the form of a simply Julian succession, like that in A or AA, or in a modification of this simply Julian succession, like that of the Natural-Julian, or that of the Positive-Julian of our own Tables: and the inspection of this Table K is all that is necessary to verify the assertion which we have often had occasion to make, that the proper form of Natural-Annual time, treated as Julian, *per se* was Gregorian in contradistinction to simply Julian, and the proper Type of this Gregorian form was the Natural-Julian, or the Positive-Julian, of our own Tables.

The truth of this assertion indeed has been strikingly illustrated by the matter of fact, demonstrated supra, in Section xiv; That, when the Julian time of our Tables, brought down from this epoch of April 25, the *feria* 1 at midnight, B. C. 4004, and the Julian time of the Roman Correction, brought down from the Kalends of Januarius, U. C. 709, and the Julian time of the present day, carried back from the first of January according to the proper Julian rule, all met together for the first time, in a state of equality and identity, on the Kalends of Januarius, U. C. 978, and the first of January both in the style of the Julian reckoning of the present day, and in that of the xxxvth Type of the Julian time of our Tables, A. D. 225, the fusion of all together was effected, not by the passing of the proper Gregorian time of our Tables into the Julian of the other two, but by the passing of the Julian of the other two into the Gregorian of the Tables; and the epoch of the decursus of simply Julian time itself, as taking its origin at that time, and as brought down from thence, according to the proper Julian rule, to the present day, was the Gregorian January 1 of the xxxvth Type of our Tables, and not the Julian December 31 of the xxxivth, though otherwise the same with it. It is an equally striking illustration of the same truth, that when this simply Julian time itself, brought down from January 1, A. D. 225 to A. D. 1582, assumed the form of Gregorian also, by passing into the Gregorian of A. D. 1582 it passed again into the Gregorian time of our Tables.

SECTION XXI.—*On the Decursus of the Equable Time of the Fasti, the Equable Cyclical and the Equable Nabonassarian, relatively to the Julian.*

The conclusions, respecting the distinctions and relations of Julian time, which have been thus deduced from the data supplied by this Table K, may be further illustrated and confirmed by a similar Synopsis of Equable time, both Equable Cyclical and Equable Nabonassarian.

Table L. March or decursus of Equable Cyclical and Equable Nabonassarian Time, relatively to each other and to Julian, through the Tables of the Fasti *.

SECTION XXII.—*Observations and Explanations.*

i. In this Table column C is the succession of the Equable Cyclical Thoth 1, under its proper Julian style, at the Ingress of each of our Periods; and column D, from the Ingress of the second Period downwards, is that of the Equable Nabonassarian Thoth 1, similarly represented. The first Nabonassarian term in this column only, as that which was properly corresponding at the Ingress of Period i. to the Julian epoch of origination, April 25 at midnight, is Mesore 10 at midnight; 26 terms in the order of the Equable notation before Thoth 1 at midnight, of the same time, Æra Nab. 0 − 1, May 21 at midnight, B. C. 4004.

ii. Column CC is the sum of the Recession of the Equable Cyclical time of the Tables at the Ingress of every Period on the Julian, reckoned in the Noctidiurnal cycle, or period of 24 hours, perpetually; and column DD is that of the Recession of the Equable Nabonassarian, at the same time, and in the same relation. And it is to these two columns that we would direct the attention of the reader, in order to the discovery of the true reference of the Equable time of the Tables to the Julian.

Preliminary however to this examination, it is necessary to explain that, as the Equable Period of 112 years contains 40,880 days and nights, and our Julian one of 112 also contains 40,907, the Recession of the Equable Noctidiurnal time of the Tables on the Julian in this Period can be neither more nor less than 27 terms; and as the Equable Period of 140 years contains 51,100 days and nights, and our

* See page clii supra.

Julian one of 140 contains 51,134, the Recession in this Period can be neither more nor less than 34 terms. In like manner the Equable Period of 56 years containing 20,440 days and our Julian one 20,453, the Recession in this Period can be neither more nor less than 13 terms.

It follows that both the Equable Noctidiurnal and Annual time of the Tables, and the Julian Noctidiurnal and Annual, being supposed to have set out from a common epoch, at the beginning of the first of our Periods of each kind, Æra cyc. 1, B.C. 4004, and to have gone on together ever after, the Recession of the former on the latter through the Period of 112 years must be reckoned at 27 terms in the retrograde order of the Julian notation, and in that of 140, at 34, and in that of 56, at 13. And this being supposed accordingly, take what Period we may after the first, 27 days' Recession for every Period of 112 years between this assumed one and the first, and 34 for every one of 140, and 13 for every one of 56, added together must bring us from the Julian date of the Equable ingress for the time being to that of the corresponding Julian one. And the matter of fact, brought to light by the comparison of these two Tables, L and K, is *this*, That the application of the rule just laid down to the Equable ingresses in col. C, Table L, under their proper Julian dates, recovers the Julian epochs at the same points of time in col. BB, Table K; and the application of the same rule to the Equable Ingresses in col. D, Table L, recovers the Julian epochs in col. AA, Table K—proving demonstratively that the proper standard of reference of Equable time in col. C, Table L, (the succession of the Equable Cyclical Thoth in terms of Julian perpetually,) is the Julian of col. BB, Table K, and that of Equable time in col. D, Table L, (the succession of the Equable Nabonassarian Thoth under its proper Julian style,) is the Julian of col. AA, Table K.

The sum total of the Recession in question, at the Ingress of every Period after the first, it will be seen, is the same in both these columns, CC and DD, with a standing difference from the second Period downwards of 26 terms, the distance in the Equable notation of the Equable Mesore 10 from the Equable Thoth 1, by which the Recession in DD at the Ingress of every Period after the first is less than that in col.

CC. But this makes no difference to the comparison which we are proposing to institute; and it is more convenient to reckon the Recession in both these columns from the same Equable term, the first of Thoth, than from Thoth 1 in the one and Mesore 10 in the other.

The fact, to which we have just adverted, holds good of all our Equable Periods. It may suffice to exhibit the proof of the fact in three or four instances only.

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i. At the Ingress of Period xi, Table L, Recession in col. CC=305 days ($27 \times 5 + 34 \times 5$); and in col. DD=279 days, 26 terms less. Hence—

i. Table L, col. C, Period xi.

Cyc. Thoth 1, Æra cyc. 1262, June	24	midnight, B. C. 2744.
Recession (CC)	305	
	329	
	−304	
Table K, col. BB, Period xi, April	25	

ii. Table L, col. D, Period xi.

Nab. Thoth 1, Nab. 1262, July	10	midnight, B. C. 2744.
Recession (DD)	279	
	289	
	−274	
Table K, col. AA, Per. xi, April	15	

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ii. Ingress of Period xxi, Table L, Recession in CC, 603 days ($27 \times 8 + 34 \times 11 + 13 \times 1$); and in DD, 577 days, 26 terms less. Hence—

i. Table L, col. C, Period xxi.

Cyc. Thoth 1, Æra cyc. 2495, Aug.	30	midnight, B. C. 1512.
Recession (CC) 603–365 =	238	
	268	
	−243	
Table K, col. BB, Period xxi, April	25	

ii. Table L, col. D, Period xxi.

Nab. Thoth 1, Nab. 2495, Sept. 5 midnight, B. C. 1512.
Recession (DD) 577–365 = 212

217
−212

Table K, col. AA, Per. xxi, April 5

iii. Ingress of Period xxxi, Recession in col. CC, 901 days, $(27 \times 11 + 34 \times 17 + 13 \times 2)$; in DD, 875, 26 less. Hence—

i. Table L, col. C, Period xxxi.

Cyc. Thoth 1, Æra cyc. 3728. Nov^{r} 5 midnight, B. C. 280.
Recession (CC) 901–730 = 171

176
−151

Table K, col. BB, Period xxxi, April 25

ii. Table L, col. D, Period xxxi.

Nab. Thoth 1, Nab. 469, Nov. 1 midnight, B. C. 280.
Recession (DD) 875–730 = 145

146
−120

Table CC, col. AA, Per. xxxi, Mar. 26

iv. Ingress of Period xli, Recession in CC, 1213 days $(27 \times 15 + 34 \times 23 + 13 \times 2)$; in DD, 1187, 26 less. Hence—

i. Table L, col. C, Period xli.

Cyc. Thoth 1, Æra cyc. 5017, Dec. 28 midnight, A. D. 1009.
Recession (CC) 1213–1095 = 118

146
−121

Table K, col. BB, Period xli, April 25

ii. Table L, col. D, Period xli.

Nab. Thoth 1, Nab. 1758, Dec. 14 midnight, A. D. 1009.
Recession (DD) 1187–1095 = 92

106
−90

Table K, col. AA, Period xli, Mar. 16

v. Ingress of Period xlix, Recession in CC, 1464 days ($27 \times 18 + 34 \times 28 + 13 \times 2$); in DD, 1438, 26 less. Hence—

i. Table L, col. C, Period xlix.

Cyc. Thoth 1, Æra cyc. 6053, April 21 midnight, A. D. 2045.
Recession (CC) 1464–1460 = +4

Table K, col. BB, Period xlix, April 25

ii. Table L, col. D, Period xlix.

Nab. Thoth 1, Nab. 2794, Mar. 30 midnight, A. D. 2045.
Recession (DD) 1438–1095 = 343

373
−365

Table K, col. AA, Period xlix, Mar. 8 *.

* As both our Equable Periods in C and D, and our Julian ones in BB and AA, begin and proceed together, and contain the same number of years of their own denomination respectively, the sum of mean time in the 48 Equable Periods of Table L *plus* the Recession should be exactly the same as the sum of mean time in the 48 Julian Periods of Table K. It is easy to shew that it is so.

i. Table K, col. BB. From April 25 at midn. B. C. 4004, Period i, to April 25 at midn. A. D. 2045, Period xlix, in simple Julian time, we have,

6000 mean Julian years	=	2 191 500 days.
40	=	14 610
8	=	2 922
6048	=	2 209 032
Corrections		−48
In the Positive Julian time of the Tables		2 208 984

These examples sufficiently illustrate and confirm our Position that the Recession of the Equable time of our Tables on the Julian, added to the Equable epochs in col. C, recovers the Julian epochs in col. BB, and added to the Equable epochs in col. D, recovers the Julian ones in col. AA. And the former in Table L being the Cyclical and the Nabonassarian epochs respectively, and the latter in Table K being the Positive-Julian, and the simple Julian, form of the Julian time of our Tables respectively, the relation between which, as we have seen, is that of the simply Julian, and the Gregorian form of that Julian, these coincidences and these distinctions are demonstrative of the truth of the observation which we have often had occasion to make—That the proper standard of reference of Equable-Cyclical time was Gregorian-Julian, and that of Equable-Nabonassarian was the corresponding Julian—or to state this Proposition somewhat differently—If Equable time in every shape was to be referred to some proper Julian standard perpetually, while this standard of reference for Nabonassarian-Equable must be the simply Julian, like that in col. AA, Table K, for Equable-Cyclical it must be the Gregorian form of that simply Julian, like that in col. BB.

The distinctions in the Julian time of the Tables, and in the relations of the different kinds of this time *inter se*, and the corresponding distinctions in the relations of the Equable time of the Tables to the Julian, which have thus been pointed out, supply the true explanation also of those other phenomena of the decursus of Equable time, the fact of which is substantiated by too many proofs to leave any doubt about it; and yet, as peculiar to and characteristic of one of the Divisions of this kind of time, and not of the

ii. Table L. col. C. From Thoth 1 at midn. Æra Cyc. 1, Period i, to Thoth 1 at midn. Æra Cyc. 6049, Per. xlix, we have,

6000 Equable years	=	2 190 000 days.
40	=	14 600
8	=	2 920
6048	=	2 207 520
Recession, 48 Equable Periods		1 464
Sum of mean time in 48 Positive-Julian Periods		2 208 984

other, *a priori* perhaps was not to have been expected, and at first sight is calculated to occasion some perplexity. As for instance, why the Equable Cyclical time of the Tables at stated times stands still eight years in terms of Julian, while Equable Nabonassarian descends one term in the same respect every four years perpetually. The *rationale* of this distinction must now appear. Equable-Cyclical stands still in comparison of Equable-Nabonassarian just when and where Gregorian-Julian stands still in comparison of simple Julian; that is, at the egress and ingress of each of our Periods. As also, why a given Equable-Cyclical term assumed, at a particular time, under its proper Julian style, as the head of a particular succession, remaining ever after the same in its own notation rises with successive Periods one term in the order of the Julian; for so does a given Gregorian term under the same circumstances in comparison of a simple Julian one. And why, on the other hand, a given Julian term, assumed at a particular time as the same with some corresponding Equable-Cyclical term, remaining the same itself ever after, descends, on the Cyclical epoch of origination, one term in the order of the Equable notation, with the ingress of every Period; for so does simple Julian time under similar circumstances on Gregorian.

And as two things now appear from the above review, first, that the proper Julian time of the present system of things from the first has been Gregorian, in contradistinction to simply Julian; secondly, that, as often as simply Julian time itself has come to be mixed up with this proper Julian time of the system, it has been only as derived from this proper Julian time, and as borrowing the epoch of its own decursus from some term which previously was making part of the Gregorian succession of the system, the knowledge of these facts, along with the other of the essential reference of the Equable-Cyclical time of the system to the proper Julian in the form of the Gregorian, and of that of the Equable-Nabonassarian to the simply Julian, as thus perpetually dependent upon and derivable from the Gregorian, supplies all the explanation which can be desired of a phenomenon of very great importance, and yet of perpetual occurrence, in the history of calendars—viz. that while, in the derivation of any other kind of Calendar from the Primitive, the epoch of origination, under its proper Julian style, is invariably supplied by the Equable-Cyclical reckoning for the time being, the corresponding Nabonassarian term is assumed and treated as that epoch ever after. In this instance too, the principle of the distinction is the same which has just been pointed out. Gregorian time in such a system of things as the present supplies the epoch even of simple Julian; and Equable-Cyclical, for the same reason, supplies the epoch of Equable-Nabonassarian—or what comes to the same thing, as a simply Julian succession of any kind, when first mixed up with the present system of things, must borrow its epoch from the Gregorian of the time being, so a simply Nabonassarian one, similarly coming into being at a given time, must borrow its epoch from the Cyclical of the same time.

We had occasion to explain this distinction in the first Part of our work[v], when tracing the succession of the two Types of Equable time, the Cyclical and the Nabonassarian, from the time when they first coincided in all respects, (the ingress of Period xxvii of each kind,) down to Period xxxv; since which both have proceeded together, in the same kind of relation, one to the Gregorian, the other to the Julian, time of the present day. And as the *rationale* or principle of the distinctions then laid down may probably now be better comprehended by the reader, than it might have been then, we shall perhaps be excused if we revert to this subject here.

These Types of the Equable time of both kinds were EIGHT in number, corresponding to so many Julian ones; the differences between which we classed at that time under the heads of the EPOCHS of ORIGINATION, the EPOCHS of FIXATION, and the EPOCHS of CONTINUATION respectively. And we would still retain these divisions, but with a slight change in the order of enumeration, so as now to stand in the form of the EPOCHS of ORIGINATION, the EPOCHS of CONTINUATION, and the EPOCHS of FIXATION; in which order we may proceed to explain them afresh, but with as much brevity as possible.

i. The EPOCHS of ORIGINATION. The Equable Epoch of Origination, in each of these instances, is first and properly

[v] Fasti Cath. i. 664 sqq. Dissert. viii.

the Cyclical Thoth 1, at the ingress of the given Period, and secondarily and through that the corresponding date of the Nabonassarian Thoth. The Julian Epoch of Origination is the Julian term coincident with both at the same point of time, and the Hebdomadal is the *feria* common to both, at the same time also.

Thus, i. at the Ingress of Per. xxvii, B. C. 728, the relation of Equable Nabonassarian time to Equable Cyclical, at that moment, being one of equality, the Equable Epoch of Origination was Thoth 1 in both, reckoned from midnight, the Julian was Feb. 21, the Hebdomadal, the *feria* 3ª.

ii. Period xxviii, B. C. 672, the relation of Nabonassarian to Cyclical time being now that of Thoth 1 of the former to Epagomene 5 of the latter, the Equable Epoch of Origination of the Type of this Period was Thoth 1 Cyc. = Thoth 2 Nab., the Julian, Feb. 8, the Hebdomadal, the *feria* 3ª.

iii. Period xxix, B. C. 532, the relation of Nabonassarian to Cyclical time being now that of Thoth 1 of the former to Epagomene 4 of the latter, the Equable Epoch of Origination of this Type was Thoth 1 Cyc. = Thoth 3 Nab., the Julian, Jan. 5, the Hebdomadal, the *feria* 3ª.

iv. Period xxx, B. C. 420, the relation of Nabonassarian time to Cyclical being now that of Thoth 1 of the former to Epagomene 3 of the latter, the Equable Epoch of this Type was Thoth 1 Cyc. = Thoth 4 Nab., the Julian, Dec. 9, the Hebdomadal, the *feria* 4ª.

v. Period xxxi, B. C. 280, the relation of the two kinds of Equable time being now that of Thoth 1 of Nab. to Epagomene 2 Cyc., the Equable Epoch in this Type was Thoth 1 Cyc. = Thoth 5 Nab., the Julian, Nov. 5, the Hebdomadal, the *feria* 4ª.

vi. Period xxxii, B. C. 140, the relation of the two kinds of time being now that of Thoth 1 Nab. to Epagomene 1 Cyc., the Equable Epoch in this Type was Thoth 1 Cyc. = Thoth 6 Nab., the Julian, October 2, the Hebdomadal, the *feria* 4ª.

vii. Period xxxiii, B. C. 28, the relation being now that of Thoth 1 Nab. = Mesore 30 Cyc., the Equable Epoch of this Type was Thoth 1 Cyc. = Thoth 7 Nab., the Julian, Sept. 5, the Hebdomadal, the *feria* 4ª.

viii. Period xxxiv, A. D. 113, the relation being now that of Thoth 1 Nab. = Mesore 29 Cyc., the Equable Epoch of this Type was Thoth 1 Cyc. = Thoth 8 Nab., the Julian, Aug. 2, the Hebdomadal, the *feria* 4a.

ix. Period xxxv, A. D. 225, the relation having now become that of Thoth 1 Nab. = Mesore 28 Cyc., the Equable Epoch of this Type was Thoth 1 Cyc. = Thoth 9 Nab., the Julian, July 6, the Hebdomadal, the *feria* 4a.

ii. The Epochs of Continuation. By these Epochs of Continuation we understand the proper Equable, and the corresponding Julian and Hebdomadal, style through subsequent Periods, as derived from and dependent upon that of the Period of Origination; and the Equable Epoch of Origination in each, as we have seen, being Thoth 1 Cyc. = to some corresponding Nabonassarian term, (Thoth 1, Thoth 2, Thoth 3, and so forth, up to Thoth 9.) the Equable Epoch of Continuation is this Nabonassarian exponent of Thoth 1 Cyc., the same in terms, in its own style ever after, but in the Cyclical, accompanying it perpetually, descending one term for every Period, from Thoth 1 Cyc. to Epagomene 5 Cyc., and from Epagomene 5 Cyc. to Epagomene 4 Cyc., and so on, as low as Mesore 28 Cyc.

Thus, i. the Epoch of Origination in the Type of Period xxvii being Thoth 1 Cyc. = Thoth 1 Nab., the Epoch of Continuation in the style of this Type through succeeding Periods is Thoth 1 Nab. = Epagomene 5 Cyc., at the ingress of Period xxviii; Thoth 1 Nab. = Epag. 4 Cyc., at that of Period xxix: and so on down to Thoth 1 Nab. = Mesore 28 Cyc., at the Ingress of Period xxxv.

Thus, ii. Period xxviii, the style of Origination being Thoth 1 Cyc. = Thoth 2 Nab., the style of Continuation, Period xxix, is Thoth 2 Nab. = Epag. 5 Cyc.; Period xxx is Thoth 2 Nab. = Epag. 4 Cyc.: and so on, down to Period xxxv, Thoth 2 Nab. = Mesore 29 Cyc.

So, iii. Period xxix, the style of Origination being that of Thoth 1 Cyc. = Thoth 3 Nab., the style of Continuation, Period xxx, is Thoth 3 Nab. = Epagomene 5 Cyc.; Period xxxi is Thoth 3 Nab. = Epagomene 4 Cyc.: and so on, down to Period xxxv, Thoth 3 Nab. = Mesore 30 Cyclical.

So, iv. Period xxx, the style of Origination having been Thoth 1 Cyc. = Thoth 4 Nab., the style of Continuation, Period xxxi, is Thoth 4 Nab. = Epagomene 5 Cyc.; Period xxxii is Thoth 4 Nab. = Epagomene 4 Cyc.: and so on, down to Period xxxv, Thoth 4 Nab. = Epagomene 1 Cyclical.

So, v. Period xxxi, the style of Origination having been Thoth 1 Cyc. = Thoth 5 Nab., the style of Continuation, Period xxxii, is Thoth 5 Nab. = Epagomene 5 Cyc.; Period xxxiii is Thoth 5 Nab. = Epagomene 4 Cyc.: and so on, down to Period xxxv, Thoth 5 Nab. = Epagomene 2 Cyclical.

So, vi. Period xxxii, the style of Origination having been that of Thoth 1 Cyc. = Thoth 6 Nab., the style of Continuation, Period xxxiii, is Thoth 6 Nab. = Epagomene 5 Cyc.; Period xxxiv is Thoth 6 Nab. = Epagomene 4 Cyc., Period xxxv is Thoth 6 Nab. = Epagomene 3 Cyclical.

So, vii. Period xxxiii, the style of Origination being Thoth 1 Cyc. = Thoth 7 Nab., the style of Continuation, Period xxxiv, is Thoth 7 Nab. = Epagomene 5 Cyc.; Period xxxv is Thoth 7 Nab. = Epagomene 4 Cyclical.

So, viii. Period xxxiv, the Equable style of Origination having been Thoth 1 Cyc. = Thoth 8 Nab., the equable style of Continuation, Period xxxv, will be Thoth 8 Nab. = Epagomene 5 Cyclical.

The Julian Epoch of Continuation, in each of these instances, is the Julian term corresponding, at the same point of time, both to the Nabonassarian and to the Cyclical Epoch; and the Hebdomadal Epoch of Continuation is the *feria* common, at the same time, to both.

iii. The Epochs of Fixation. From the inspection of the Table [x], the reader will see that the first of these Equable Types, which entered Period xxvii in the form of Thoth 1 Cyc. = Thoth 1 Nab., Æra Cyc. 3279. Nab. 20, Feb. 21, B.C. 728, the *feria* 3ª at midnight—continued through the intermediate Periods in the style of Thoth 1 Nab. = to the corresponding Cyclical term successively, enters Period xxxv in the form of Thoth 1, of Nab. Nab. 973 = Mesore 28 Cyc., Æra Cyc. 4231, June 28, A.D. 225, the *feria* 3 at midnight; which is altogether the same thing as Thoth 9 Nab., Nab. 973 = Thoth 1 Cyc., Æra Cyc. 4232, July 6, the *feria* 1ª A.D. 225.

He will observe too that the second, having entered the Table, Period xxviii, in the style of Thoth 2, Nab. 76 = Thoth

x Fasti Cath. i. 664.

1, Æra cyc. 3335, Feb. 8, the *feria* 3a at midnight, B.C. 672, Period xxxv enters it in the form of Thoth 2, Nab. 973 = Mesore 29, Æra cyc. 4231, June 29, the *feria* 4, A. D. 225, altogether the same as Thoth 9, Nab. 973 = Thoth 1, Æra cyc. 4232, July 6, the feria 4a, A. D. 225.

In like manner, he will perceive that the rest of these Types, from the *third* to the *eighth*, having entered the Table at the ingress of the intermediate Periods in the style of Thoth 3, Thoth 4, Thoth 5, Thoth 6, Thoth 7, Thoth 8, of Nab. respectively, (each in its turn, at such times, = Thoth 1 Cyclical, and both to the same Julian and the same Hebdomadal term,) continued down to Period xxxv, each in its proper style, are found entering at last, virtually, if not actually, in the form of Thoth 9, Nab. 973 = Thoth 1, Æra cyc. 4232, July 6, the *feria* 4a at midnight, A. D. 225.

Now this final state of the relation of the Equable Nabonassarian style of Continuation to the Equable Cyclical, which thus took place at the ingress of the xxxvth Type of both kinds, we call the Epoch of Fixation of all these Types alike; meaning thereby that all having met together in this state of relation, both in the Equable, and in the Julian, and in the Hebdomadal, style of each, at the Ingress of this Period—all have since proceeded together, in this same state of relation, from the Ingress of this Period to the present day. The actual difference between the Cyclical and the Nabonassarian style of each, at the Ingress of this xxxvth Type of each, being assumed as that of Thoth 1, Cyc. = Thoth 9, Nab., eight terms in the order of the equable notation, long as they have since gone on together, from A. D. 225 to the present day, it is still no more even at present—though the *prima facie* comparison of the Equable Cyclical and the Equable Nabonassarian style in the last Type of each which entered our Tables, Period xlvii, A. D. 1793, would imply it was a great deal more—the first of Thoth, Æra cyc. 5801, as our Tables shew, having fallen June 21 at midnight, A. D. 1793, and the first of Thoth, Nab. 2542, June 1 at midnight the same year, 20 days apparently before the other.

But this difference was merely nominal, not real. Thoth 9 Nab. at this very time being June 9, and Thoth 1 Cyc. being June 21, the distance between them in the order of the Julian notation at this very time was 12 terms; and 12 terms was the difference existing *de facto* A. D. 1793 between the Julian and the Gregorian time of our Tables themselves, supposed to have begun and proceeded together from Period xxxv. A. D. 225 to Period xlvii. A. D. 1793. Reduce this Gregorian term, June 21, the *feria* 5ª, A. D. 1793, to its corresponding Julian one, at that time, June 21–12, or June 9, the feria 5ª also, and there is no longer any difference between Thoth 1, Æra cyc. 5801 and Thoth 9, Nab. 2542. Both are the same with June 9, A. D. 1793, the *feria* 5ª.

The existing relations of the Equable and the Julian time of our Tables, at the present day, do consequently confirm the truth of those relations between them, which we have been elucidating, from the first. They demonstrate, by a kind of sensible proof of the fact, that the Julian standard of the Equable Cyclical time, of the present system of things, being still the Gregorian, it must have been so from the first, and that of the Equable Nabonassarian being still the simply Julian, it must have been the simply Julian from the first. All the distinctions, which we have been endeavouring to explain, are ultimately resolvable into this *one* principle; that as the Equable time of the present system of things must necessarily be referrible to the Julian, so the natural standard of Equable Cyclical is the natural form of this Julian, which we have shewn to be Gregorian, not simply Julian; in consequence of which, as the Gregorian Julian time of the system has given the law to the simply Julian perpetually, so has the Equable Cyclical to the Equable Nabonassarian.

And this proper Natural or Gregorian form of the Julian time of the system being represented by the Positive-Julian of our Tables in col. BB, Table K, and the simply Julian form of that Gregorian by col. AA; hence it is, that, as this simply Julian succession in AA descends one term in the order of the Julian notation from Period to Period on the Positive-Julian in BB, so does the Equable Nabonassarian in D, Table L, descend one term in the order of the Equable notation, on the Equable Cyclical; and while Equable Cyclical at the Ingress of successive Periods stands still eight years in terms of Julian, Equable Nabonassarian descends one term in the Julian notation every four years. Hence too it is, (as we shewed more at large in the Preliminary Address to our Origines Kal. Italicæ [z],) that, as even the Positive-Julian or Gregorian time of our Tables at the Ingress of successive Julian Periods drops one term in the order of feriæ, so does the Equable Cyclical, at the Ingress of successive Equable Types; and so does Equable Nabonassarian drop two.

It is also to be observed on the above representation, that as the Equable epoch of Continuation, in all these instances after the first, is first Thoth 2 Nab. = Thoth 1 Cyc., then Thoth 3 Nab. = Thoth 1 Cyc., and so on; the Equable style of Continuation in all alike may be considered and treated as virtually Thoth 1 Cyclical, first in the form of Thoth 2 Nab., then in that of Thoth 3 Nab., and so on; agreeably to the natural order and sequence of the Equable notation, which can proceed in no form so properly as that of Thoth 1 to Thoth 1 perpetually. But it can be actually in this form of Thoth 1 of Nabonassar only in the Equable style of the Type of Period xxvii continued through the intermediate Periods down to the xxxvth. And this, in reality, is the most important of all these secondary or derivative Types. It is that in which, as we have seen, the General Succession of the Nundinal time of our Tables, from B. C. 1340 downwards, and the Particular Succession of that of the Roman Correction of Numa, from B. C. 712 downwards, first meet together, and each begins to verify and confirm the other. It is that which supplies both the Equable and the Julian style of the numerous dates which appear in the Magna Compositio [a]. The style of this Type in short, both in its origin and in its continuation, is the Nabonassarian style of Equable time, in terms of Julian, properly so called, perpetually; the traditionary date of which may have been, as the learned have commonly assumed, Feb. 26, B. C. 747, but the true (in the sense of that of the first coincidence of Nabonassarian with Cyclical Equable time, in a state of equality,) was the Ingress of the xxviith Julian, and the xxviith Equable, Type of our Tables, 19 years later, Feb. 21, B.C. 728 [b].

[z] Pagg. xliv–xlix. [a] Fasti Cath. ii. 407–418. [b] Ibid. ii. 397–407.

SECTION XXIII.—*On the effect of the two Miracles of Scripture upon the relations of Julian, Hebdomadal, and Equable time* inter se, *before and after the epoch when it was complete.*

The two Tables, which we have just been considering, along with two more which we have also compiled, serve another very important purpose; that of enabling us to judge of the nature and extent of the anomaly, introduced into the relations of the Julian, the Hebdomadal, and the Equable time of the present system of things, by the suspension or change of the ordinary law of one of the measures of time, the noctidiurnal cycle, which has twice but only twice been permitted. On this very interesting question, Tables K and L, and two more, KK and LL, intended as an accompaniment of them [c], will supply the data necessary to come to a right conclusion.

In explanation of these Supplementary Tables we observe, That as no such interruption of the established order of things as either of these Miracles can be supposed to have happened *de facto* any time between Period i and Period xx, in Table K or L, so, we are at liberty to assume for argument's sake, that none might have occurred even after the ingress of this Period to the end of both these Tables; in which case there could be no conceivable reason *a priori* why every thing in both of them should not be supposed to have gone on from Period xx to the end of each, exactly in the same way as from Period i to Period xx. On this assumption we have compiled these two Tables, KK and LL, as an accompaniment of the other two, K and L, respectively; recognising and allowing for the anomaly in question, as matter of fact, in its proper order of time on each occasion, in the two latter, ignoring it *pro tempore*, or passing it over as something which never actually happened, in the two former.

On this principle, the first Part of Table K having brought down the actual succession of Annual Natural and Annual Julian time in Noctidiurnal and Hebdomadal, according to one and the same rule of administration, from Period i to Period xx, Table KK will be understood to take up this succession at the ingress of Period xx, and to carry it on,

[c] See page clii supra.

according to the same law and rule of administration as before, to the end. In like manner, the first Part of Table L having brought down the succession of Equable time in Julian, according to one and the same law, from Period i to xx, Table LL takes it up at the Ingress of Period xx, and carries it on to the end, according to the same law as before. And it is an obvious inference from the state of the case in each of these instances, that if the actual course of things, before any such interruption, as that of the Miracles, can be supposed to have yet occurred, is truly and faithfully represented in Tables K and L, from the ingress of Period i to that of Period xx in each, then, if it may be assumed that no such anomaly as either of those Miracles occurred *de facto* even after the ingress of Period xx, the actual course of things must be as truly and faithfully represented in Tables KK and LL perpetually, from Period xx to the end, as in Tables K and L, from Period i to Period xx.

The actual truth then of the first part of these two Tables, K and L, from Period i to xx, being assumed in any case, and the hypothetical truth of this continuation of both, in KK and LL respectively, being assumed also, the comparison of KK with the latter part of K, from Period xx downwards, and that of LL with the latter part of L, from Period xx also, will make us aware of the true nature and extent of an anomaly, like that of the two Miracles, upon its proper subject matter, and within its proper sphere of action, recognised by hypothesis, in its proper order of time, in one of these representations, but passed over, as something which never occurred, in the other.

Let us proceed to this comparison i. in the case of the Natural-Julian time of the Tables, under its proper Julian and proper Hebdomadal style perpetually. This Natural-Julian time being the succession of mean vernal equinoxes, or of the first day of the mean tropical year, under its proper Julian date and its proper *feria*, at the ingress of each of our Periods; first with respect to its proper Julian style—this succession, it will be observed, having been regularly brought down in Table K, according to one and the same law, from April 25 at midnight, at the ingress of Period i, to April 6 at midnight, at the ingress of Period xx, proceeds alike, both in

Table K, col. B, and in Table KK, col. B', down to March 30 at midnight, the ingress of Period xxviii in K and that of Period xxvii in KK; and from March 30 at midnight, at the ingress of Period xxviii in K and that of Period xxvii in KK, to March 9 at midnight, at the ingress of Period xlix in Table K, and that of Period xlviii in Table KK. It is manifest therefore, that whatever the effect of the Miraculous anomaly on the Natural-Julian time of the present system of things, in other respects, it could have made no difference to its proper *Julian style*, whether the Miracles had happened or not. The Julian style of the first day of the mean tropical year perpetually, and by necessary consequence that of every other, dependent upon, and derived from, that of the first, would have been *de facto* the same in either case.

Secondly, with respect to its proper Hebdomadal style. This same succession being traced in Table K according to the same law, not only from the first Julian term, April 25 at midnight, but also from the first Hebdomadal one, the *feria prima* at midnight, down to the twentieth, April 6 at midnight, the *feria quinta* at midnight, it will be observed that while the proper Hebdomadal style, as well as the proper Julian one, of the mean vernal equinox for the time being, proceeds alike in both these Tables, K and KK, from the ingress of Period xx to the ingress of Period xxviii in Table K, and that of Period xxvii in Table KK, (B. C. 672, in either case alike,) at this moment, (the ingress of Period xxviii in the one, and Period xxvii in the other,) a distinction begins to appear in the Hebdomadal, though not in the Julian, style of the Natural-Julian time of both Tables, and continues to appear at the ingress of successive Periods to the end in each; viz. that, without any difference in the Julian style of the ingresses, the Hebdomadal style in K begins and continues to be one term lower, in the order of *feriæ*, than the Hebdomadal style in KK. The Julian and Hebdomadal style of Period xxviii, Table K col. B B. C. 672, is March 30 at midnight, the *feria* 4ª at midnight; that of Period xxvii, Table KK col. B' B. C. 672 also, is March 30 at midnight, the *feria* 5ª at midnight. The Julian and Hebdomadal style of the last ingress in Table K, A. D. 2015, is March 9 at midnight, the *feria* 4ª at midnight, that of the last, Table KK,

A. D. 2015 also, is March 9 at midnight, the *feria* 5ª at midnight.

Now these two Periods (the xxviiith in Table K, the xxviith in Table KK, B. C. 672, in either case alike,) being critically those in which the effect of the two Miracles, on the relations of Annual and Noctidiurnal time to each other, was first realised in its totality, there can be no question that a distinction, affecting the Hebdomadal, though not the Julian, style of Natural-Annual time, beginning to be perceptible just at this moment, and ever after perceptible, in one of these successions but not in the other, must ultimately be resolvable into this difference between the successions themselves, that one of them (that in Table K), by hypothesis, reflects in its phenomena the proper effect of the Miraculous anomaly, and the other (that of Table KK), by hypothesis, does not. The distinction in question therefore is demonstrative that though the proper Julian style of the Natural-Annual time of the present system of things has not been affected even by such an anomaly as that of the Miracles, the proper Hebdomadal style, in consequence of that anomaly, is not now what it must have been if those Miracles had never happened. Every Noctidiurnal term in the Natural year, under its proper Julian style, if those Miracles had never occurred, must have been representing a different *feria* of the Hebdomadal cycle, a *feria* one number higher than that which it is actually representing at present.

Let us proceed to the same comparison, ii, in the case of the Positive-Julian succession of the Tables. This succession is exhibited in col. AA and BB in Table K, and in col. A′A′ and B′B′ in Table KK—AA and A′A′ being the simply Julian succession of this kind in both, and BB and B′B′ the corresponding Gregorian one; and the *rationale* or principle of these successions in both is, That Natural-Annual and simply Julian time being supposed to have set out together on the same Julian term, April 25 at midnight, and the same Hebdomadal one, the *feria* 1ª at midnight, and Natural to have receded on Julian ever after at the rate of one day and night, one period of 24 hours, in the course of each of our Periods, as often as the Natural-Annual time of the Tables thus becomes defective in comparison of the Julian, or the Julian thus becomes excessive in comparison of the Natural, the Julian and the Hebdomadal style in col. AA and A′A′ descends one term in the order of the Julian notation, and one in the order of *feriæ*, and the last day in the outgoing Period, under its proper Julian and proper Hebdomadal style at that time, becomes the first day of the incoming one.

Now we are at liberty to suppose that this course of things, having begun at the Ingress of Period i. in Table K, and gone on, unchanged as yet, down to that of Period xx, continued in Table KK to go on unchanged and unmodified in any the least degree to the Ingress of Period xxvi; and we are also at liberty to assume that, though the actual time of one of the Miracles was different from that of the other, and the total effect of both was produced at twice; yet, for argument's sake, it may be supposed to have been realised at once, and instead of the addition of 12 hours to the sum of mean Julian time in two different Periods, at two different times, one of 24 hours, to that of some one Period, to have been made at once; and this Period the xxvith in Table KK, the ingress of which bears date March 31, the *feria* 4ª at midnight. In like manner, we are free to assume that, as some one *year* in this Period, and some one *day* in that *year*, must have been the subject of the anomaly in question, so the particular year was the last of the Period, and the particular day in that year was the last but two.

These assumptions being made accordingly, the first observation, on this state of the case, will be, That, if the sum of mean solar time in this xxvith Julian Type in Table KK, in comparison of that in the xxvith Natural Type, by the end of the last year must already have become excessive to the extent of 24 hours; the addition of 24 hours, all at once, to the former, and not to the latter, must render it excessive to the extent of 48 hours. The next will be, That, such being the inequality *de facto* existing between Natural-Annual and Julian-Annual time, just at the egress of the xxvith Type, and the ingress of the xxviith, of each; if the ordinary mode of redressing this inequality would have been to assume the last day of the outgoing Julian Type, under its proper Julian and proper Hebdomadal style, as the first day of the incoming one, the mode required, in this instance, by the extraordinary circumstances of the case, must be the assumption, not of the *last* day, but of the *last* but *one*, of the outgoing Type, under its proper Julian and proper Hebdomadal style, as the first day of the incoming Type. And this being admitted, then, with respect to this day, and its proper Julian and Hebdomadal style—the first day of this xxvith Julian Type being March 31, the last must be March 30, and the last but one March 29; and the Hebdomadal style of March 31, in the first year of the Period being the *feria* 4[a], that of March 30, in the last year, must be the *feria* 3[a], and that of March 29 the *feria* 2[a], and that of March 28 the *feria* 1[a].

Let it then be supposed that just at this moment—just at the egress of the xxvith Type of a Natural and a Julian succession of this kind, regularly derived from the first of a series, bearing date April 25, the *feria prima* at midnight, the last day but two of the Type, under its proper Julian and proper Hebdomadal style at the time, March 28, the *feria prima* at midnight, became a period of 48 hours, instead of 24; and consequently March 28 virtually the same as March 28 and 29 together, and the *feria prima* as the *feria prima* and the *feria secunda*. If, notwithstanding this, the Julian March 29, in the regular course of things both before and after, must still take up the Julian March 28, and the *feria tertia* must still take up and continue the *feria secunda*; it will follow, that the Julian style of the day, next after that which was the subject of this anomaly, must still be March 29, and the Hebdomadal style must still be that of the *feria tertia*. If so, then both according to the law of the succession from the first, and in deference to the special reasons of the case also, the *last* day but *one* of the xxvith Type, (now ready to leave the Tables,) requiring at this moment to be assumed, under its proper Julian and Hebdomadal style, as the first of the xxviith, (now ready to enter the Tables,) it follows that one and the same simply Julian succession, such as we exhibit in col. A and A′A′ of these two Tables, K and KK, perpetually, carried on according to one and the same law, while it was still unaffected by any such anomaly as that of the Miracles, down to A. D. 672—carried on beyond this point, according to the same law in principle as before, but as now affected and modified by the Miraculous anomaly, would be bound to proceed, not as it is represented in Table KK, at the ingress of Period xxvii, from March 30, as the Julian style of the *feria tertia* at midnight, but as it is represented in Table K, at the ingress of Period xxviii, from March 29*.

* It is manifest that, if no such thing as the Miraculous anomaly were even yet to be taken into account, March 28 B. C. 672, the succession of the Period of 24 hours, for the next seven cycles of that kind, under its proper Julian style, must proceed as follows.

A. *Succession of the Period of* 24 *hours, from March* 28 *at midnight, B. C.* 672, *to April* 3 *at midnight, as unaffected by the Miracles.*

March 28	Period i
—— 29	—— ii
—— 30	—— iii
—— 31	—— iv
April 1	—— v
—— 2	—— vi
—— 3	—— vii

And this would differ in no respect from the ordinary succession of this kind both before and after this time.

If the Miraculous anomaly, and in its cumulative effect, is to be taken into account at this time, the above succession will have to be exhibited as follows.

B. *Succession of the Period of* 24 *hours, from March* 28 *at midnight, B. C.* 672, *to April* 3 *at midnight, as affected by the Miraculous anomaly.*

March 28	Period i and ii
—— 29	—— iii
—— 30	—— iv
—— 31	—— v
April 1	—— vi
—— 2	—— vii
—— 3	—— viii

Between which and the preceding the difference will be, that while each exhibits only the same number of Julian terms, March 28 to April 3, these Julian terms contain among them, in the former, seven Periods of 24 hours, 168 hours of mean solar time, and in the latter, eight Periods of 24 hours, 192 mean solar hours.

And with respect to the Hebdomadal style of these different Julian terms, March 28 to April 3, in this latter scheme, respectively—if the proper measure of the Hebdomadal *feria*, from the beginning of things down to this point of time, has been the Period of 24 hours of mean solar time, This conclusion, it appears to us, is only a necessary inference from the above premises. And it should be remembered that while both the successions, B′ and A′A′ in this Table KK, are only so far real of their kind, as they are the representation of what must have been real, if every thing had gone on in the same way from the first, the parallel successions in B and AA in Table K are the actual ones throughout, not only while every thing was still proceeding in the same way, but also, after the established and preexisting course of things had been twice subjected to an anomaly like that of the two Miracles.

iii. Let us next proceed to compare the phenomena of Table L and Table LL respectively, before and after the same epochs, with a view to discover in what way the decursus of the Equable time of the Tables, of both kinds, along with that of the Julian, must have sympathised with the same Miraculous anomaly.

And here we must begin with observing that, as both the Nabonassarian and the Cyclical time of the Tables, referred alike from the first to the Julian, set out on the same Julian term, April 25 at midn., but on a different Equable term,

and that proper measure from this time forward also continues to be this Period, it must still be considered its proper and legitimate measure between these Julian dates of March 28 and April 3, B. C. 672 also. And in this case the proper Hebdomadal style of the first of these terms, March 28, as the Julian style of two of these Periods of 24 hours at once, being that of the *feria* 1ª and the *feria* 2ª both at once, the proper Hebdomadal style of the next, March 29, must be that of the *feria* 3ª, and so on, down to that of the seventh, April 3, the *feria* 8ª: and it will be peculiar to this cycle of seven, in the sense of a week, to contain seven Julian terms, like every other before and after it, March 28 to April 3, and eight Hebdomadal terms, unlike any other before or after it, from the *feria* 1 to the *feria* 8ª.

March 29, the *feria* 3ª, is consequently the Julian and the Hebdomadal style required by the reason of things and the necessity of the case, at this period of the decursus of col. AA, in Table K, from first to last. And if so, the Dominical letter of the simple Julian succession, in this column, from this time forward, undergoes a change, and that of the corresponding Gregorian one, in col. BB. Before, in col. AA, it was C perpetually; from this time forward to the end of the Tables it is B. It is superfluous to add that this latter only is the letter, from this time forward, confirmed all along by the matter of fact.

Mesore 10 at midn. and Thoth 1 at midn. respectively, though there was no difference between their respective epochs in the order of the Julian notation, there was one of 26 terms in that of the Equable; a difference which, according to the subsequent administration of both, along with Julian, in our Tables, could not be diminished at a greater or a lesser rate than that of one term for every Period. Consequently, whether any such anomaly as that of either of the Miracles had afterwards occurred or not, the equalisation of Nabonassarian-Equable to Cyclical-Equable time, in terms both of their own, and of the Julian, notation alike, would still have required xxvi changes of the Julian and the Equable Type of the Tables, and could not, under any circumstances, have been expected before the ingress of the xxviith Julian and the xxviith Equable Period alike.

But as to the actual time of this equalisation, forasmuch as it was thus dependent not on the lengths, but on the number of these intermediate Periods of both kinds, should any necessity arise in the course of the decursus of Equable and Julian time in conjunction, of assuming a fresh Julian Type, and beginning a fresh Julian Period, in *half* the usual length of time, it is manifest that the equalisation of the two kinds of Equable time, at the ingress of the xxviith Type of each, would be brought about so much the sooner. And the occurrence of the first of the two Miracles, in the course of Period xx of both kinds, would give occasion to such a necessity. For though, as Equable Annual and Julian-Annual time are both only a certain invariable complex of Noctidiurnal, and the ultimate element of both is the same unit or integer in the shape of the Noctidiurnal cycle, or period of 24 hours, perpetually, the addition of 12 hours to a given Julian Type must have been one of the same amount to the corresponding Equable Type, and therefore would make no difference to the relation of the Equable and Julian time of a particular Type *inter se*; yet Julian-Annual time in every Type being necessarily referrible to Natural, and Equable as necessarily to Julian, the occurrence of the first miracle in the 19th year of Period xx of both kinds, B. C. 1520, entailing in its consequences a change of the Julian Type in relation to the Natural, 56 years earlier than usual, would draw with it a change of the Equable, in terms of the Julian, 56 years earlier also; the consequence of which would be the Equalisation of Equable-Nabonassarian to Equable-Cyclical time, 56 years earlier than otherwise would or could have been the case. And *this* accordingly is the difference in the decursus or march of one and the same thing, Nabonassarian-Equable and Cyclical-Equable time, relatively to Julian and to each other perpetually, which is seen to exist in these two Tables, L and LL respectively; that, while both set out in the same state of equality to the Julian, and the same of inequality *inter se*, the equalisation of Nabonassarian to Cyclical, in terms of the Equable and in terms of the Julian notation alike, takes place in neither before the ingress of Period xxvii in each, but 56 years earlier in the one than in the other; at the ingress of Period xxvii, B. C. 728 in Table L, and at that of Period xxvii, B. C. 672, in the other.

It is manifest therefore that the effect of the Miraculous anomaly on the relations of Equable time *inter se*, and to Julian, was simply to accelerate the equalisation of Nabonassarian to Cyclical time, in terms of Julian, by half a period of 112 years; and that, if that anomaly had not twice occurred, and twice produced its necessary effect of abridging the current Julian Period by 56 years, the equalisation, shewn by the Tables *de facto* B. C. 728, must have been shewn *de facto* B. C. 672. And that our Tables are right in shewing this equality as matter of fact, at the ingress of Period xxvii, Table L, B. C. 728, not at that of Period xxvii, Table LL, B. C. 672, is proved by the dates of the three oldest eclipses recorded in the Magna Compositio, from actual observation at Babylon; the first, March 19 Julian, B. C. 721, and Thoth 30 Equable, both Nabonassarian, Nab. 27, and Cyclical, Æra Cyc. 3286, only seven years after the ingress of this Period; the second and third, March 9 and Sept. 1 Julian, B. C. 720, Thoth 19 and Phamenoth 16, both in the Æra of Nabon. 28 and in the Æra Cyc. 3287 alike, only eight years later [c].

It is evident also, that another effect of the Miraculous anomaly on the relations of Equable time to Julian, when now complete, in the case of Nabonassarian in particular, has

[c] See Fasti Cath. ii. 411.

been to lower the epoch of reference of Nab. Equable time in relation to Julian, ever since B. C. 672, one term in comparison of what it was before, and what it must have continued, if no such anomaly had happened. It has been seen[d], that the Recession in col. DD in Table L, added to the Nabonassarian Ingresses in col. D, recovers the Julian epoch of origination, or epoch of reference, perpetually. And this test being applied to each of these Tables, L and LL respectively, i. The Recession, (in D′D′), at the Ingress of Period xxvii, Table LL, 781 days, added to the Julian Feb. 7 at midnight, the 27th Nabonassarian Ingress, recovers the Julian March 30 at midnight, B. C. 672. ii. The Recession (in DD) at the Ingress of Period xxviii, Table L, 780 days, added to the Julian Feb. 7 at midnight, the 28th Nabonassarian Ingress, recovers the Julian March 29 at midnight, B.C. 672. The same difference was perceptible in Table KK, col. A′A′, at the Ingress of Period xxvii there, compared with Table K, col. AA, at the Ingress of Period xxviii, B.C. 672, in both alike. The simply Julian epoch of continuation in the former was March 30 also, and in the latter was March 29; the former what it must have been, if the Miracles had never happened, the latter what it became in consequence of their happening. And thus the phenomena of these columns AA in Table K, and D and DD in Table L, and those of A′A′ in Table KK, and D′ and D′D′ in Table LL, do mutually illustrate and confirm each other; the former attesting the matter of fact, which has held good of the relations of Equable and Julian time as a consequence of the Miracles, the latter what it must have been if they had never happened.

It follows too from these premises, that all those distinctions in Nabonassarian Equable and Cyclical Equable time, *inter se*, and in terms of Julian and Hebdomadal, affecting the epochs of origination, the epochs of continuation, and the epochs of fixation, of Derivative Calendars, explained supra[e], which began to characterise the two successions *de facto* from B. C. 728 downwards, if the Miracles had never happened, must have begun to do so only from B. C. 672 downwards; and instead of *eight* different Epochs and Types of this kind,

[d] Supra, clviii. [e] Page clxxx sqq.

(the number *de facto* existing between B. C. 728, and A. D. 225,) there could have been only seven—all that were admissible between B. C. 672, and A. D. 225; and the final state of the relation of the two kinds of Equable notation, from A. D. 225 to the present day, instead of being that of Thoth 9 of Nab. = Thoth 1 Cyclical, must have been that of Thoth 8 of Nab. = Thoth 1 Cyc. And the Hebdomadal style of Thoth 1 of Nab., instead of ranging one term in the order of *feriæ* under that of Thoth 1 Cyc., as it has done *de facto* ever since A. D. 225, must have been the same with it, from that day to this, perpetually.

Let us then briefly recapitulate these several effects of the anomaly in question. i. On the Natural-Julian time of the system. It has made no difference to its proper Julian style, in appearance at least. The Julian dates of the mean Vernal Equinoxes are still nominally what they must have been, if the Miracles had never happened. But it has made a difference to their Hebdomadal style, and thereby introduced a real distinction, under an apparent agreement, which otherwise would not have existed. Every natural term in its proper order, and under its proper Julian style, both in annual and noctidiurnal time, beginning with the first in every Period, is now ranging one term lower in the order of the Hebdomadal cycle, than it would otherwise have been doing, if the Miracles had never happened.

ii. On the Positive-Julian time of the system. Without disturbing the relation of the simple Julian form of this time, and the Gregorian, *inter se*, it has raised the Hebdomadal style of each, one term, without raising the Julian also, in the same proportion. If the Miracles had never occurred, the simply Julian epoch of continuation, at the ingress of Period xxviii, must have been March 29, the feria 2ª, and the corresponding Gregorian one April 25, the feria 2ª, B.C. 672; in consequence of these Miracles, and *de facto*, the former became March 29 the feria 3ª, and the latter April 25 the feria 3ª.

iii. On the Equable time of the system. Without disturbing the relation of these two kinds of time to each other, as one of inequality from the first, or the measure of that inequality, 26 terms in the order of the Equable notation, in excess and defect respectively, and without affecting the relations of both alike to the Julian time of the system, it produced the specific effect of antedating the equalisation of Nabonassarian to Cyclical time by 56 years; and from the time when both became subject alike to the rule and administration of Julian time, exactly as it has gone on since A. D. 225, it left the relations of the two kinds of Equable time to each other indissolubly fixed in the form of Thoth 9 of Nab. = Thoth 1 Cyc., instead of Thoth 8 of the former = Thoth 1 of the latter.

Of these various effects of one and the same anomaly on one and the same system and course of things before and after B. C. 672, perhaps that which was least to be expected *a priori*, and is likely to appear the most unaccountable, is the first enumerated; a change in the Hebdomadal, without any change in the Julian, style or characters of the Natural-Annual and the Noctidiurnal time of the system. It may be worth while therefore to revert to this; in order to discover, if possible, the steps of the process by which it was brought about.

Now, with respect to the *style* of this Natural succession, the positive or conventional mode of distinguishing every numerical cycle of day and night, in the order of natural annual time, which enters the succession in col. B of both these Tables, K and KK—the principle or rationale, as we have before explained [f], is *this*—assuming only that it must be a civil one of some kind, and Julian civil, in preference to any other—assuming also that the first Julian term of this kind must be April 25 at midnight, B. C. 4004, as often as Natural-Annual time, setting out from this epoch, is found to have receded one period of 24 hours on Julian Annual, supposed to have set out from it also, the style of the Natural succession recedes one term, in the order of the Julian notation, on April 25. Nor can any thing be more reasonable, or any thing less objectionable *a priori*, than that, so long as Natural-Annual time is liable to recede 24 hours on Julian Annual in one of our Periods, the style of Natural-Annual should recede, in the style of Julian, one term also for every Period.

[f] Page xxxiv sqq.

It may be said however that the length of our Periods is sometimes 112, sometimes 140 years; but if the recession of Natural-Annual on Julian-Annual time, for each of our Periods, is to be 24 hours exactly, each of our Periods is bound to be reckoned at 129 years[g]. This may be true in itself, and yet, on this particular question of the change of the style of Natural-Annual time one term in the order of the Julian notation, for each of our Periods, it may be shewn that it would make little or no difference whether they were all to be strictly reckoned at 129 years, or cyclically, some at 112, and some at 140.

The proper scheme of this Cyclical Alternation is that which is proposed in Table KK. In that Table there are 47 Periods, 112 or 140 years in length, from B. C. 4004, Per. i, to A. D. 2045. Per. xlviii, and 47 descents of the style of the ingresses from April 25 at midn. the Julian date of Period i, to March 9 at midn. that of Period xlviii. And in these 47 Periods there are 6,048 mean Julian years, from April 25 at midn. B. C. 4004, to April 25 at midn. A. D. 2045, and 6,048 mean natural, from April 25 at 0 h. 0 m. 21·6 sec. from midn. B. C. 4004, to March 9, 3 h. 4 m. 40·8 sec. from midn. A. D. 2045. And in these 47 Periods, each reckoned alike at 129 years of either kind, there would be 129 × 47, or 6,063 years, only 15 years more than 6,048. It is clear then that even in this case we should have required 47 steps of descent on the Julian style of the epoch, April 25 at midn. between Per. i, B. C. 4004, and Per. xlviii, A. D. 2060; and we require no more between April 25, B. C. 4004, and March 9, A. D. 2045, in the administration of our own Tables.

In Table K indeed we see there are 48 of these cyclical Periods between B. C. 4004 and A. D. 2045; i. e. one more than in Table KK. But if we proceed to compare these two Tables in their details, and Parts of the one with the corresponding Parts of the other, we see that from B. C. 672 in each to A. D. 2045 in each, there are 21 Periods in both, alternating alike 112 or 140 years in length, and 21 changes of style in both from March 30, the Julian style of the first of these Periods in each, to March 9, that of the last. And the sum of years in these 21 Periods is 2,716 in each, only 7

[g] See supra, p. xxxviii.

years greater than that of 21 Periods, each 129 years long, 2,709—so that in this case too it would make no difference to the number of Periods, and to the changes of the style of the ingresses, which would be necessary between B. C. 672 and A. D. 2045, in either of these Tables, whether the Periods themselves were cyclically reckoned at 112 or 140 years, or strictly at 129.

And if we compare the first Part of Table K with the first of Table KK, from B. C. 4004 to B. C. 1568 in both, we see there are 19 Periods in each, alternating alike at 112 or 140 years, and 19 drops of the style from April 25 at midn. to April 6 at midn. in each; and the sum of years in these Periods in each is 2,436—only 15 years less than the sum of 19 of 129 years each, 2,451. So that in this case too, 19 Periods, and 19 descents of the epoch on April 25 at midn. between B. C. 4004 and B. C. 1568, or at the latest B. C. 1553, must still have been necessary even if all our Periods had been 129 years in length.

The cause of the real difference then between these Tables K and KK, by virtue of which there is one Period more from B. C. 4004 to A. D. 2045, in the former than in the latter, must be confined to the interval between B. C. 1568, before which it does not appear to have operated, and B. C. 672, after which it ceases to operate, except in appearance merely. And these being also the extreme dates between which each of the Miracles of Scripture finds its place historically, it is easy to see that the difference in question is ultimately to be traced to that coincidence, and to the rule prescribed for the construction of these two Tables respectively; that of taking the Miraculous anomaly into account in its proper order of time in Table K, and not taking it into account, or treating it as a matter of fact, in Table KK.

Let us therefore propose two short Tables, M and N, from B. C. 1568 to B. C. 672, analogous to Table II, exhibited supra on a larger scale, shewing the decursus of Tropical time for this interval, on two different hypotheses; one in Table M, which assumes the fact of the Miracles, and allows for it in its proper place and order of time, the other in Table N, which supposes every thing to have gone on, from B.C. 1568 to B.C. 672, just as it had done from B.C. 4004 to B.C. 1568.

TABLE M.

Period	B. C.	Len.		h.	m.	s.	D.L.	Fer.
xx	1568	56	April 6	2	54	36·0	A	5
xxi	1512	140	— 5	16	29	38·4	B	3
xxii	1372	112	— 4	14	27	14·4	C	1
xxiii	1260	140	— 3	17	37	19·2	D	6
xxiv	1120	140	— 2	15	34	55·2	E	4
xxv	980	112	— 1	13	32	31·2	F	2
xxvi	868	140	Mar. 31	16	42	36·0	G	7
xxvii	728	56	— 30	14	40	12·0	A	5
xxviii	672	140	— 30	4	15	14·4	B	4

TABLE N.

Per.	B. C.	Len.		h.	m.	s.	D.L.	Fer.
xx	1568	112	April 6	2	54	36·0	A	5
xxi	1456	140	— 5	6	4	40·8	B	3
xxii	1316	112	— 4	4	2	16·8	C	1
xxiii	1204	140	— 3	7	12	21·6	D	6
xxiv	1064	140	— 2	5	9	57·6	E	4
xxv	924	112	— 1	3	7	33·6	F	2
xxvi	812	140	Mar. 31	6	17	38·4	G	7
xxvii	672	140	— 30	4	15	14·4	A	5

These Tables begin alike B.C. 1568, and end alike B.C. 672. Each contains 896 years. The Julian and Hebdomadal style of the first Period in each is April 6, the *feria* 5ª, and there are seven steps of descent in each from April 6 to March 30. Yet there are *eight* Periods in M, and only *seven* in N; and though the Julian style of the last Period in each is the same, March 30, the Hebdomadal in M is March 30, the *feria* 4ª, in N is March 30, the *feria* 5ª.

Now to discover how this is brought about, remembering only that in Table M the Miraculous anomaly is to be taken into account, and in Table N it is not; we observe that the actual year of the first miracle having been B. C. 1520, the 49th year of the first Period in Table M, when the recession of Natural-Annual on Julian-Annual time had already accumulated to the best part of 12 hours, the addition of 12 hours, just at this time, to the Julian Type of the Period without any corresponding one to that of the Natural, would render the Julian time of the Period so excessive in comparison of the Natural, before the Period itself was half over, that the assumption of a fresh Julian Type would become as necessary at the end of the first 56 years, as under the usual circumstances, at the end of the first 112.

And with regard to the style of *this* Type; if the ordinary rule at the end of the Period (as in Table N) would have required April 5 the *feria* 3ª at *midnight*, the analogy of such a rule, as adapted to the extraordinary circumstances of the case in Table M, would require April 5 the *feria* 3 at *noon*; and the proper effect of the miraculous anomaly in this first instance of its operation, and as taken into account at the time, would be *this*, viz. Without disturbing the Julian or the Hebdomadal style of Noctidiurnal, or Annual, time, (whether Natural-Annual, or Julian-Annual,) from the first down to this period of its decursus, to substitute a new epoch of the Noctidiurnal cycle in terms of the Annual; the point of noon, instead of the old one, the point of midnight. And this change, in consequence of the first instance of the Miraculous anomaly, having been introduced at the ingress of Period xxi in Table M, so long as any fresh instance of the same kind of anomaly could not yet be supposed to have occurred, every thing would go on in Table M, from Period xxi, B. C. 1512, to Period xxvii, B. C. 728, just as it does in Table N, from Period xxi, B. C. 1456, to Period xxvi, B. C. 812; only from this new epoch of the *feria* 3 at *noon* in the former, and from the old one of the *feria* 3 at *midnight* in the latter. The effect of the first Miracle was to substitute a new epoch of the Noctidiurnal succession in terms of the Annual, the point of noon instead of that at midnight, but not a new style either Julian or Hebdomadal.

The historical date of the second miracle in like manner having been the 19th year of Period xxvii in Table M, another addition of 12 hours to the Julian time of the Period, but not to the Natural, besides the ordinary recession of the latter in the former at the end of the first 56 years of both, would again necessitate a change of the Julian Type of the Period at the end of the first 56 years of this Period, as much as at the end of the first 56 of the xxth. And as to the nature of this change; the Noctidiurnal succession in this Table M, as we have seen, at the ingress of every Period since the xxist, being bound to be reckoned from noon; at the end of the first 56 years, when the recession of Natural-Annual time on Julian, cyclically reckoned, must already have amounted to 12 hours, if a fresh Type of the Julian time of the Period, from the special reasons of the case, was to be assumed just at this time, the Noctidiurnal succession in this Type would be bound to proceed from the point of midnight. That is, the same reason of things, which, in consequence of the first Miraculous anomaly, had prescribed a change of the reckoning of the Noctidiurnal cycle in terms of the Annual, from the epoch of midnight to that of noon, in consequence of this second occurrence of the same kind of anomaly, would prescribe a change in the same reckoning from the epoch of noon, to the epoch of midnight again; and thereby the restoration of the old and original rule of the reckoning itself.

And with regard to the Julian and the Hebdomadal style of this succession from the same time forward, it will probably simplify the consideration of this question, and facilitate the discovery of the truth, if, without calling in question the fact of the Miraculous anomaly at last, we are permitted to assume in this instance also, that every thing went on from B. C. 1568 to B. C. 812, exactly as it is represented in Table N from the ingress of Period xx to that of Period xxvi, and that, when the Miraculous anomaly was permitted at last, the joint effect of both the Miracles was concentrated in the last year, and the last week of the last year, of this xxvith Period itself—B. C. 673–672.

Now the succession of Noctidiurnal time in terms of Annual, through the first half of this xxvith Period, being reckoned from the *feria* 7ª at midnight, through the next half, for the reasons explained supra [b], it must be reckoned from the *feria* 6ª at midnight. And the last week of each of our Natural-Annual Periods being one of six terms only, let us draw out two schemes of this last week, in Period xxvi, Table N; one, which we will call A′, adapted to the hypothesis that every thing went on to the end of the Period, as it had done from the beginning, the other, B′, adapted to the hypothesis of the intervention of the Miraculous Anomaly critically somewhere in the decursus of this last week.

[b] Page cxl sqq. *n*.

TABLE A′.

Last six days of Period xxvi, Table N, on the hypothesis of no anomaly.

Mar. 24	Fer. 6	B. C. 672
25	7	
26	1	
27	2	
28	3	
29	4	
Mar. 30	Fer. 5.	

TABLE B′.

Last six days of Period xxvi, Table N, on the hypothesis of the Miraculous anomaly.

Mar. 24	Fer. 6	B. C. 672
25	7	
26, 27	1	
28	2	
29	3	
Mar. 30	Fer. 4.	

According to the first of these schemes (A′), the succession of Natural-Annual time, under its proper Julian and Hebdomadal style, at the ingress of the next Period, must have been carried on in the form of March 30 the *feria* 5^a; according to the other, B′, in the form of Mar. 30 the feria 4^a. And that this latter only, under the circumstances of the case, could be agreeable to the truth, will probably further appear from the comparison of this scheme of Table B′ here, with that which we exhibited in Table B supra[i].

TABLE B.

First week of Noctidiurnal time, under its proper Julian and Hebdomadal style, as affected by the Miraculous anomaly.

	Midnight.	
Mar. 28	Fer. 1 and 2	B. C. 672
29	3	
30	4	
31	5	
Apr. 1	6	
2	7	
3	8	

TABLE B′.

First week of Natural-Annual time, under its proper Julian and Hebdomadal style, as affected by the Miraculous anomaly.

	Midnight.
Mar. 26, 27	Fer. 1
28	2
29	3
30	4
31	5
Apr. 1	6
2	7.

There is no difference between these schemes, except that in one of them (Table B), two periods of 24 hours, in the

i Page clxxvi.

sense of two *feriæ* of the Hebdomadal cycle, are represented by one Julian term, March 28; and in the other (Table B′), two Julian terms, in the sense of two periods of 24 hours, March 26 and 27, are represented by one *feria* of the Hebdomadal cycle, the *feria* 1. In other respects, *mutatis mutandis,* they are the same, both in their Julian and in their Hebdomadal style respectively, and the sum of mean solar time is the same in each, viz. 192 hours. But one of these schemes (B) is the succession of Noctidiurnal time, under its proper Julian and Hebdomadal style, as affected by the Miraculous anomaly, and the other (B′) is that of Natural-Annual, under its proper Julian and Hebdomadal style, as affected by the same anomaly also; and these are such different things themselves, that even one and the same anomaly could not have been expected *a priori* to affect them both alike, and especially an anomaly like this of the two Miracles, the stress of which, as we have seen, fell entirely on the Noctidiurnal cycle, and was neither intended to produce, nor in fact did produce, any the least effect, different from usual, on the Natural-Annual. It has been seen supra [k], that simple Noctidiurnal time, even as subject to an anomaly of this kind, must still go on, in its Hebdomadal style, as if unaffected by it; in its Julian style it must sympathise apparently with it: and by parity of reason, simple Annual time in the sense of Natural, though mixed up perpetually with Noctidiurnal, yet not affected in this instance itself by any such anomaly as Noctidiurnal, must go on, in its proper Julian style, as if no such anomaly had occurred, and reflect the anomaly, if at all, only in its Hebdomadal. The phenomenon therefore which under such circumstances was to be expected *a priori* in the first week of Noctidiurnal, and the first week of Natural-Annual time, respectively, after both were subjected to the anomaly in question, would be precisely that which is represented in these two schemes, B and B′ respectively; the phenomenon in the former of eight Hebdomadal terms and seven Julian terms, going to one week there, and that in the latter of eight Julian terms, and seven Hebdomadal, making up one week here.

In this manner does every difficulty, connected with this

[k] Page clxxvi *n.*

subject, admit of being satisfactorily removed. The result is that the actual course and succession of Natural Annual time under its proper Julian and proper Hebdomadal style, after B. C. 672, as much as before, is that which we have exhibited in Table K, col. B. If any further proof of this fact were necessary, it might be supplied by the actual comparison of the Equinoxes of the Table, from B. C. 672 to the end, under the Julian and the Hebdomadal dates there assigned them, with the Julian and Hebdomadal dates of the same natural phenomena, as actually observed and recorded from the time of Hipparchus down to the present day. For though these dates in our Tables are those of the *mean* Equinoxes, and those recorded ones are those of the *true*, there is no difference at a given time between the *mean* and the *true*, but the equation of the centre; and the equation of the centre, for any time between B. C. 672 and the present day, taken with a positive sign, and applied to these recorded dates, (first reduced from their own meridian to that of the ancient Jerusalem,) will recover from them the dates of our Tables; as, on the other hand, this same equation, taken with a negative sign, from the dates of our Table will give these recorded ones.

We shall therefore conclude what we wish to say on these subjects in general, with one or two more observations. As, i. The preceding explanations are well calculated to confirm the assertion which we have often had occasion to make, that a given Julian term, reduced to its proper place and order, in the succession of such terms from the first, after B. C. 672 must be found to have dropt to the next lower term in the order of the Julian notation: March 24, for instance, the epoch of the Sphere of Mazzaroth before B. C. 672, to March 23, its epoch ever after. This is no more than a necessary consequence of the depression of the head of the simple Julian succession in Table K, col. AA, from March 30, before B.C. 672, to March 29 after it; the fact of which, as we have seen, is attested and placed out of doubt, by the phenomena of this col. AA in Table K, compared with those of A′A′ in Table KK, before and after the same date: yet, what is also remarkable, with no change in the proper Hebdomadal style of the Julian term in question—from its proper feria before B. C. 672 to the next lower feria after it: for we have seen that the feria of March 29, as the head of the Julian succession, from B. C. 672 downwards, in col. AA, Table K, is just the same as that of March 30, as the head of the same succession after the same point of time downwards, in col. A'A' of Table KK.

ii. It is also a corollary to these conclusions, that, though the number of *actual* days and nights, or actual *feriæ,* from a given Julian date and its proper *feria* before B. C. 672, to the same date and its proper *feria* after, is still *de facto* neither more nor less than it would have been, if the Miracles had never happened, the number of *periods of* 24 *hours,* from one of those terms to the other, is greater at present by unity, than the number of *days and nights,* or the number of *feriæ.* And this distinction could now be taken into account, and the succession treated as if it had gone on uniformly with the cycle of day and night and cycle of *feriæ,* only by reckoning each of these successions, ever since B. C. 672, as if they had begun and proceeded together from April 24 the feria 1ª, instead of April 25 the feria 1ª.[1]

iii. It will follow that one day's increment in mean longitude with the mean motion of our Tables, 59′ 8″·329 91, being reckoned for every period of 24 hours of mean solar time since the beginning of things, the total increment of the mean Julian longitude of the system, from April 25 at noon or midnight, B. C. 4004, to April 25 at noon or midnight, A. D. 2045, must now be one day's mean motion greater than that of the sum total of actual days between the same extreme dates. Nor can this distinction also now be taken into account, and the annual increment in mean longitude of the mean Julian time of the system on the mean tropical, be treated as if it had always been the same in the period of 24 hours, and in the cycle of day and night, except by assuming the epoch of the mean Julian longitude of the system 59′ 8″·329 91 (24 hours mean motion) behind that of the tropical; i. e. 359° 0′ 51″·670 09, instead of 0° 0′ 0″.

Thus the annual increment of one mean Julian year on one mean tropical, in the mean motion of our Tables, being

[1] Cf. the Preliminary Address of the Origines Kal. Italicæ, pag. lxv–lxxv.

assumed at 27″·499, 556, 801, we shall have the sum total of this increment in our Tables from first to last,

	27″ 499 556 801 × 6048
i. e.	46° 11′ 57″·319 532
Add one day's mean motion	59 8 ·329 91
	47 11 5 ·649 44

And this latter, reckoned from April 24, 0 h. 0 m. 21·6, is the same with the former reckoned from April 25, 0 h. 0 m. 21·6 s. Thus,

			h. m. s.	Mean Long.
i.	B. C. 4004	April 25	0 0 21·6	0° 0′ 0″·0
	+ 6048			46 11 57 ·319 532
	A. D. 2045	April 25	0 0 21·6	46 11 57 ·319 532
ii.	B. C. 4004	April 24	0 0 21.6	359° 0′ 51″·670 09
	6048			47 11 5 ·649 44
	A. D. 2045	April 24	0 0 21·6	46 11 57 ·319 53

It is evident also that, if the effect of the Miracles has been to depress the epoch of the whole succession of mean Julian time by 24 hours, without affecting that of the mean Tropical or the mean Sidereal; this depression has served to diminish the Julian style of the Precession of the sum of the mean Julian time of our Tables on that of the mean Tropical, and that of the Precession of the sum of the mean Sidereal on that of the mean Julian. And this distinction too is now to be taken into account by reckoning the Julian Precession on mean Tropical time from a point 24 hours behind that of the vernal Ingress; and the Sidereal on the Julian, from April 24, 0 h. 0 m. 21·6 sec., instead of April 25, 0 h. 0 m. 21·6 sec.

		h.	m.	s.
Thus,				
A. D. 2045, we have the 6049th V. E. ..	Mar. 9	3	4	40·8
Subtract	− 1			
Julian Epoch ..	Mar. 8	3	4	40·8
6048 years Julian Precession, Introduction to the Tables &c. p. lxxxii, Table xxxiv ..	+ 46	20	55	40·8
	55	0	0	21·6
	− 31			
	April 24	0	0	21·6
6048 years Sidereal Precession	+ 38	11	16	23·966 62
Table xxvii	62	11	16	45·566 62
	− 61			
Epoch of the 6009th mean Sidereal year, in terms of the 6049th mean Julian: see Table H, p. cxlvi, supra	June 1	11	16	45·566 62

iv. The reader cannot fail to observe too that, if he compares the succession of Julian terms in col. AA, Table K, with the parallel succession in col. B of the same Table, down to B. C. 672, *nominally* they are the same, with a *real* difference between them perpetually, the token or test of which is the distinction perceptible in the succession of Hebdomadal terms, which accompanies each of these Julian successions, respectively. These Julian terms in col. AA descend one term in the order of the Julian notation, and one in the order of *feriæ*, from Period to Period—and so does the Natural-Annual time, under its proper Julian and Hebdomadal style, relatively to Julian at present, and so it is represented doing in the latter part of col. B, Table K, which takes up col. A, A. D. 365, and continues it to the end of the Table.

Now this Julian succession in col. B of Table K is the true succession of Julian Equinoxes, as we have seen, perpetually, and each of them a Gregorian term of that kind; and yet this parallel succession in col. AA, as every one must admit, would be competent to represent a succession of Julian Equinoxes also, analogous in all respects to those in col. A, from A. D. 365 downwards, whether as supposed to have been brought down, according to one and the same law, from the first, or as supposed to have been carried back, according to one and the same law, (that of the simple succession of Natural Annual in simple Julian Annual time, in either case,) to the beginning. These Julian Equinoxes in col. AA are consequently those which are recoverable by calculation carried back from the present day; and nothing but the inspection of these two columns, B and AA, in this Table K, is necessary to illustrate and confirm the assertion supra[m], that, by no other arrangement but that of the adoption of a Julian style, like this, could the true Julian dates of the mean Vernal Ingresses have been kept Gregorian in themselves perpetually, yet such as to fall in with the simply Julian ones at the same times, and for the same things, recoverable by calculation at present.

And, more than this, it must follow from the same coincidence, that neither the astronomer nor the chronologer can go back from the present day with any Julian term, to any

[m] Pag. xlvi.

epoch between A. D. 225 and the beginning, but he will find the very same Julian term, at the very same point of time, in the true Julian style of that æra, ready to take its place, and to represent it in any relation, in which a given Julian term, at a given time, can be supposed to stand to anything else, and especially to the Noctidiurnal Cycle in general, or to the Hebdomadal in particular.

Lastly, a question may be raised, in connection with the subjects which we are thus discussing, whether the same Miraculous anomaly, which has left such permanent marks of itself on the relations of Noctidiurnal, Hebdomadal, and Julian time, *inter se*, though it does not appear to have affected either Natural-Annual or Natural-Sidereal time, might not possibly have affected Lunar. And, in answer to this question too, if we must declare our own opinion about it, it must be that, to the best of our judgment and belief, the occurrence of the first Miracle did produce an effect on Lunar time, the fact of which might be demonstrated from the testimony of Scripture, and from that of astronomy, even at present. Our limits however would not permit us to enter on the proof of this point here; and, interesting and important as it may be, it must necessarily be reserved for some future opportunity.

ORIGINES KALENDARIÆ HELLENICÆ.

ORIGINES KALENDARIÆ HELLENICÆ.

DISSERTATION I.

On the Lunar Correction of the Primitive Solar year at Athens, made by Solon; and on the first Type of the Hellenic Octaëteris.

CHAPTER I.

SECTION I.—*On the first introduction among the ancient Greeks of the Civil Calendar in the sense of the Lunar.*

THE institution of a Civil calendar, in the form of a Lunar one, among the ancient Greeks is attributed to Solon: and with respect to this fact, the testimony of Hellenic antiquity is uniform and consistent. It confirms the truth of this testimony, that, begin our researches into the history of the Greek calendar as far back before the time of Solon, and bring them down as near to his time, as we may; still, before the actual date of the correction of Solon, we meet with no proofs of the use of any form of the Civil calendar in Greece, distinct from the primitive; the common calendar originally of the Greeks as much as of the rest of mankind. Various modifications of this primitive calendar may be discovered even among the ancient Greeks; all of them older than the time of Solon, and some of them almost as old as the Greek name and nation: modifications too which, having been once brought into being for a particular object, continued to be applied to their original use and purpose, down to the time of Solon itself, and even beyond it. But there is no clear proof that any modification of this kind was anywhere conceived or realized among the Greeks, which amounted to a correction of the calendar properly so called, before his time. It does not appear that any of them proposed to change the common reckoning of civil time, before in use; or that any of them was followed by such an effect. They all presuppose a calendar, from which they were themselves derived; and it does not appear that even as coexistent with this, and going on in conjunction with it ever after, they interfered with it, much less superseded it.

These modifications too of the preexisting calendar were lunar, in almost every instance, as much as Solon's; and the same kind of lunar correction of the primitive solar year, in general, as his: and yet it is still true that no such correction in any instance led to the adoption of the same kind of calendar by the rest of the Greeks, but Solon's. The first reformation (if it may be so called) of the Solar calendar, which affected the public reckoning of time among the ancient Greeks, and led in its consequences to the total disuse by them of the Primitive calendar, after all was the Lunar correction of Solon. The reader will be pleased to receive these statements, at present, on our own authority. To make them good by the necessary proofs, will form the proper business of the second division of our work; in which we propose to treat of the ancient Greek calendar, before the time of Solon.

Something indeed has been recorded of Thales of Miletus, which would seem to imply a change in the *style* of the Civil calendar attributable to him; *Πρῶτος δὲ καὶ τὴν ὑστέραν τοῦ μηνὸς τριακάδα εἶπεν* [a]: and very possibly this new name for the last day of the month, which tradition ascribed to Thales, in the opinion of the later Greeks, was given to the last day of their own lunar month; from which it would follow, that in their opinion also the Lunar calendar of their own time was as old as Thales. It makes little difference to the truth of our own proposition, that the Lunar calendar among the Greeks was not older than Solon, even to admit that it might have been as old as Thales; for Solon and Thales were contemporaries. But as to the nature of the calendar in the time of Thales, without calling in question the truth of the fact recorded of him, it would be very precarious to infer from it, that it must have been the last day of the lunar

[a] Diogenes Laërt. Vita, i, iii. 24. ed. Tauchnitii. 1833.

month, for which Thales invented the new name of the τριακάς. Strictly speaking, the last day of the lunar month, and the τριακὰς, in the sense of the 30th, could not always be convertible terms; because though every lunar month has a *last* day, it is not always the 30th. In the civil reckoning of lunar time among the Greeks, six months in the calendar had only 29 days. The solar month, on the contrary, must always have a 30th day; and that being especially true of the equable solar month, nothing would be more probable *a priori* than that, if Thales really gave a new name to the last day of the month, taken directly from its numerical place in the month itself, like this of the τριακὰς, it must have been to the last day of the equable solar month *.

* The true explanation of the change in the style of this *one* day in the calendar, attributed to Thales, is probably the following. It might always have been inferred from the analogy of the Lunar calendar, as derived from the preexisting equable, solar one, that the months in the latter must have been divided in the same manner as those in the former; i. e. into three periods of ten days each: and that the style of the latter in each of these decads *mutatis mutandis* must have been the same with that of the former; especially as testimony is uniform, that Solon made no change in the style of any of these divisions, except the last. And this inference, we hope to see hereafter, will be confirmed by the testimony of Homer; from which it may be collected that the civil month in his time must actually have been divided into three equal parts. He recognises at least the μὴν ἱστάμενος as one integral division of the month, which in the nature of things must have been the first; and another, the μὴν φθίνων, which for the same reason must have been the last: and if there was a μὴν ἱστάμενος, and a μὴν φθίνων, in his time, we may take it for granted there was a μὴν μεσῶν also.

It is by all means to be supposed too, though it is not in so many words attested by him, that the style in each of these decads was the same; and in each, analogous to that of the first and second divisions even in the lunar month of Solon: i. e. that the days were reckoned in each from the first to the tenth, as they are in the modern Julian calendar, from the first to the last. On this principle the first day of the third decad would be called πρώτη φθίνοντος, and the last δεκάτη φθίνοντος; and Solon, it is well known, retained this idiom even for the third decad of his lunar month, only in a retrograde order, from the δεκάτη φθίνοντος, the first of the decad, the 21st of the month, to the δευτέρα φθίνοντος, the last day but one, the day before the ἕνη καὶ νέα.

In the style of the calendar then, down to the time of Thales, the 30th

The proper style of the last day of the lunar month among the Athenians, (and in fact among the Greeks in general,) was that of the *ἕνη καὶ νέα*. Nothing is better attested than this idiom; and, though the use of this word *ἕνος* must be reckoned among the peculiarities of the Attic dialect, its signification was always that of *παλαιός*. In conjunction with *ἀρχαὶ* it was retained in another Attic phrase, that of *αἱ ἕναι ἀρχαὶ* [b], in the sense of *ἀρχαὶ αἱ παρῳχημέναι* [c], *οἱ περυσινοὶ ἄρχοντες* [d], or the like; i. e. the magistrates of the year last past: the magistrates gone, or just going, out of office, in contradistinction to those who had come, or were coming in. This idiomatic name then for the last day of the month was the same thing as that of the *παλαιὰ καὶ νέα* [dd]; and such a name for such a day, (i. e. the last of the civil lunar month as the representative of the last of the natural), might have been founded in the reason of things: the last 24 hours in the civil lunar month of 30 days being made up of the last 12 hours of the preceding mean lunar month, and the first 12 hours of the next. The first introduction therefore of this peculiar name for the last day of the lunar month is, or ought to be, an argument of the simultaneous introduction of the lunar reckoning; and the author of the former must have been the author of the latter. Now the first author of the former was Solon: *Πρῶτος…τὴν τριακάδα* † *ἕνην καὶ νέαν ἐκάλεσεν* [e]—*Σόλωνος δὲ καὶ ὅτι ὁ μὴν ὁ σεληνιακὸς οὐκ ἔστι τρια-*

of the month was the *δεκάτη φθίνοντος*: and Thales first gave it the name of *τριακάς*. That he invented corresponding names for any others of the days of the months, is not known from testimony; and cannot be inferred simply from his having given such a name to the last day of the month in particular.

† If this statement is to be literally understood, it will imply that the last day of the month was already called *τριακὰς* before Solon gave it this new name of *ἕνη καὶ νέα*. And that would confirm the inference to which we have just come, that this name of the *τριακὰς* was older than the lunar correction of Solon, and first given to the 30th of the preexisting solar month.

b Demosthenes, xxv. 775. 25.

c Harpocration, *ἕναι ἀρχαί*: Schol. ad Acharnenses, 171. *εἰς ἕνην*.

d Hesychius, *ἕννοι*. Cf. in *Γεννόν*: Suidas, *Ἕναι*.

dd Cf. Schol. ad Acharnenses, 171: Eustathius, ad Il. B. 552. 284. 30: Od. T. 307. 1866. 10: Suidas, *ἕνη καὶ νέα*.

e Diogenes Laërt. Vita, i. cap ii. 57.

κονθήμερος· καὶ διὰ τοῦτο πρῶτος αὐτὸς ἕνην ἐκάλεσε καὶ νέαν[f]. Solon therefore must have been the first author of the latter *.

It is no objection that the introduction of the Lunar calendar is not attributed to Solon by Plutarch. For when Plutarch wrote his Life of Solon, he had probably no idea that the calendar of the Athenians was ever any thing different in general from what it was in his own time. Nothing is more usual than to find it taken for granted that the Greek calendar was always some form or other of the Lunar; and the more implicitly so, the further the history of this calendar was traced backwards. Ἰστέον δὲ ὅτι μῆνα κυρίως ἔλεγον οἱ

* Compare the following from Aristophanes [1]:

Φ. Ὁ Σόλων ὁ παλαιὸς ἦν φιλόδημος τὴν φύσιν.
Σ. Τουτὶ μὲν οὐδέν πω πρὸς ἕνην τε καὶ νέαν.
Φ. Ἐκεῖνος οὖν τὴν κλῆσιν εἰς δύ' ἡμέρας
ἔθηκεν, εἴς γε τὴν ἕνην τε καὶ νέαν.

And that the day so called was the last of the month, in contradistinction to the first, called the νουμηνία, appears further on [2].

Σ. Πῶς οὐ δέχονται δῆτα τῇ νουμηνίᾳ
ἀρχαὶ τὰ πρυτανεῖ, ἀλλ' ἕνῃ τε καὶ νέᾳ;

to which question Athenæus supplies the answer [3], from the Πρότεραι Νεφέλαι, or first edition of the Nubes.

Β. Ὅπερ οἱ προτένθαι γὰρ δοκοῦσί μοι παθεῖν·
ἵν' ὡς τάχιστα τὰ πρυτανεῖ' ὑφελοίατο,
διὰ τοῦτο προὐτένθευσαν ἡμέρᾳ μιᾷ.

And that this phrase of the ἕνη καὶ νέα, though applied to this one day, was known to be equivalent to that of παλαιὰ καὶ νέα, appears from a preceding allusion [4].

Εἰ μή πέρ γ' ἅμα
αὐτὴ γένοιτ' ἂν γραῦς τε καὶ νέα γύνη.

These witticisms of the stage, and jocular allusions to the peculiar idioms of the calendar, as the devising of Solon, and as first brought into vogue by him, are abundantly sufficient to prove that no Athenian in Aristophanes' time was accustomed to refer the civil calendar of his own day, and its peculiar modes of reckoning, to any author but Solon; i. e. ever thought of attributing the first introduction of the Lunar calendar, and its characteristic idioms, to any but him: though the calendar of Aristophanes' time was that of Meton, not that of Solon.

f Proclus, in Timæum, A. 57 = 25 E. Cf. the Variæ of Petavius, Uranologium, iv. cap. ii. 140.

1 Nubes, 1187. Dindorfii. 2 v. 1196. 3 iv. 71. cf. Nubes 1198.
4 v. 1184. cf. 1222.

Ἕλληνες τὸν χρόνον τὸν ἀπὸ τῆς σεληνιακῆς συνόδου . . . ἐμέτρουν γὰρ οἱ Ἕλληνες τοὺς μῆνας πρὸς τὸν τῆς σελήνης δρόμον, Αἰγύπτιοι δὲ πρὸς τὸν τοῦ ἡλίου[g]: implying that, in the opinion of Theon at least, the use of the lunar month was as ancient among the Greeks as that of the solar among the Egyptians—*Μῆνα δὲ λέγομεν τὸν ἀπὸ συνόδου σελήνης καὶ ἡλίου χρόνον ἐπὶ σύνοδον, ὅς ἐστιν ἡμερῶν κθ΄ . . . τούτῳ δὲ τῷ μηνὶ ἐχρῶντο πρὸς τὴν τῶν πολιτικῶν ἡμερῶν διαγωγὴν, καὶ νῦν ἔτι χρῶνται, πολλοὶ τῶν Ἑλλήνων*[h].

The scholiast on Aratus is not singular in these statements; as we shall frequently have occasion to observe in the course of our inquiries. It is well known that Dionysius of Halicarnassus assumed the existence of the Metonic calendar, or of one altogether analogous to it, even at the epoch of the capture of Troy, and founded his own date of the capture on that assumption. Plutarch's account of the innovations of Solon in this respect is consequently such as was *a priori* to be expected; rather that of the reformation of a preexisting Lunar calendar which was standing in need of some correction, than that of the institution of such a calendar for the first time[i]. *Συνιδὼν δὲ τοῦ μηνὸς τὴν ἀνωμαλίαν, καὶ τὴν κίνησιν τῆς σελήνης οὔτε δυομένῳ τῷ ἡλίῳ πάντως οὔτ᾽ ἀνίσχοντι συμφερομένην, ἀλλὰ πολλάκις τῆς αὐτῆς ἡμέρας καὶ καταλαμβάνουσαν καὶ παρερχομένην τὸν ἥλιον, αὐτὴν μὲν ἔταξε ταύτην ἕνην καὶ νέαν καλεῖσθαι, τὸ μὲν πρὸ συνόδου μόριον αὐτῆς τῷ παυομένῳ μηνὶ, τὸ δὲ λοιπὸν ἤδη τῷ ἀρχομένῳ προσήκειν ἡγούμενος· πρῶτος ὡς ἔοικεν ὀρθῶς ἀκούσας Ὁμήρου λέγοντος·*

Τοῦ μὲν φθίνοντος μηνὸς τοῦ δ᾽ ἱσταμένοιο.

*τὴν δ᾽ ἐφεξῆς ἡμέραν νουμηνίαν ἐκάλεσεν. τὰς δ᾽ ἀπ᾽ εἰκάδος οὐ προστιθεὶς, ἀλλ᾽ ἀφαιρῶν καὶ ἀναλύων, ὥσπερ τὰ φῶτα τῆς σελήνης ἑώρα, μέχρι τριακάδος ἠρίθμησε**.

* Yet even this account will imply that if Solon was introducing such changes as these for the first time, he was in reality introducing a calendar reckoning, formed on the phenomena of the natural lunar month; and therefore a lunar calendar. The style of the last decad was in fact the most characteristic peculiarity of the Attic lunar month; and if that was introduced by Solon, the lunar reckoning must have been introduced by him. Cf. Proclus in Timæum, loc. cit. supra; *Καὶ ὅλως τὸ ἀναστρέψαι τοὺς ἀριθμοὺς τῶν ἡμερῶν ἀπὸ εἰκάδος, εἰς ἐκεῖνον (τὸν Σόλωνα) ἀναφέρεται.* Accordingly such was the inference which Gaza drew from this statement

[g] Scholia in Aratum, ad Diosem. 1 sqq. [h] Ib. v. 8. [i] Vita, xxv.

Diogenes Laërtius however distinctly attributes the introduction of the Lunar calendar at Athens to Solon: Ἠξίωσέ τε Ἀθηναίους τὰς ἡμέρας κατὰ σελήνην ἄγειν[k]: and it is probable that his authority for this statement was Apollodorus, whom he had quoted just before[l]. It is superfluous to argue that if this was first done by Solon, it could not have been done before. It is more to the purpose to observe that in attributing this act to him, the word which Diogenes uses is ἠξίωσε. Solon *required* the Athenians to reckon their days by the moon; Solon *thought it right* and *proper* the Athenians should regulate their calendar by the moon. The use of such language, to describe what was thus done by him, and *as* it was done, implies also *when* it was done; viz. when he was both archon and legislator; and as legislator, free to originate even such a change as this, affecting the public and private rule of life of a whole community, and as archon, empowered to carry it into effect. If this inference from the language of Diogenes is well founded, it is of importance to the present inquiry. The time of this change at Athens being thus determined to that of the archonship and legislation of Solon, we cannot proceed with our inquiries into the rise of the first Lunar correction of the primitive Solar calendar among the Greeks, without first ascertaining if possible the date of the archonship and legislation of Solon.

SECTION II.—*On the age of Solon, and the date of his Archonship and Legislation.*

According to Didymus, quoted by Plutarch[m], Solon was the son of Euphorion; and Suidas applies to him the patronymic of Κορρίδης[n]. But in the extant allusions to Solon[o] his personal style is Σόλων Ἐξηκεστίδου—Solon the son of Exekestides. Ἐξηκεστίδης is properly the patronymic of

of Plutarch's; that the author of the characteristic style of the Attic calendar was the author of the calendar also: De Mensibus, viii. 291 D–E. Cf. xv. 301 D.

k i. cap. ii. 58. xi.

l i. 58.

m Vita, i.

n In voce, probably a corruption of Κοδρίδης. See Plut. Vita, i. Apuleius, De Habitudine, i. ad prin.

o Diogenes Laërt. Vita, i. 45. Diodorus, Fragm. lib. ix: Suidas, Σόλων: Lucian, Opp. i. 416. Dialogi Mort. xx. §. 4. 55: Scholia in Platon. ii. 420. Respubl. x. 475. 4: Scholia in Demosth. Contra Steph. i. 1120. 27. Reiskii.

Ἐξήκεστος; and Ἐξήκεστος occurs in the orators, applied to a contemporary: and though Ἐξηκεστίδης might not be a common name among the Greeks, yet it was undoubtedly a proper name, long after the time of Solon[p]; and in the family of Solon in particular, not only his father, but one of his nephews, must have had that name[q]. It does not appear that Solon himself was married or left any issue behind him: but testimony is uniform that he had a brother called Δρωπίδης, who was married and had children; from one of whom Περικτιόνη, or as Suidas calls her also, Ποτώνη[r], the mother of Plato the philosopher, was lineally descended. The date of the birth of Plato being known; among the other arguments of the age of Solon one would be the genealogy of Plato, and the number of generations between him and Dropides or Solon. Two lists have been preserved of the steps and the names between Dropides and Plato; and in each of those he stands sixth from Dropides: which at the rate of 30 years to a generation would give the probable age of Dropides, and through Dropides that of Solon, 150 years before the birth of Plato, B. C. 578 or 579; at the rate of 35 or 40, B. C. 603 or 604, or 628 or 629*.

* The names of the ancestors of Plato are enumerated by Diogenes Laertius[1] as follows: Δρωπίδης, Κριτίας, Κάλαισχρος, Κριτίας ὁ τῶν τριάκοντα, Γλαύκων, Περικτιόνη, Πλάτων ἕκτος ἀπὸ Σόλωνος: and by the scholiast on the Timæus[2], as follows: Ἐξηκεστίδης, Σόλων, Δρωπίδης, οὗ Κριτίας ὁ πρῶτος, οὗ Κάλλαισχρος, οὗ Γλαύκων, οὗ Κριτίας ὁ δεύτερος, Περικτιόνη, Χαρμίδης, Πλάτων: after whom he mentions also Γλαύκων and Ἀδείμαντος (brothers of Plato). And this enumeration too makes Plato the sixth from Solon or Dropides.

It is clear from each of these lists, that two persons of the name of Κριτίας must always have been reckoned among the ancestors of Plato; and from that of Diogenes in particular, that the second of these two and Κριτίας ὁ τῶν τριάκοντα, in his opinion at least, were the same person. But without calling in question the fact that there must have been a double Critias in the line of descent from Dropides to Plato—to suppose the second the same individual, who makes so conspicuous a figure in after history between B. C. 405 and B. C. 403, and who was evidently then in the possession of all his faculties both bodily and mentally (i. e. a man of confirmed age, and not yet superannuated)—would involve the genealogy

p Cf. Scholia in Aristoph. ad Aves, 11: also 765: 1526.

q Stobæus, Florilegium, ii. 9. 58. Æliani, xxxix. 58.

r In voce Πλάτων.

1 Vita, lib. iii. §. 1.

2 ii. 424. 10. 2.

In like manner the date of the oration of Demosthenes, De Falsa Legatione, is known, B. C. 343; and in this the

of Plato in no slight chronological difficulties, from which we could not escape except by supposing the second of his ancestors of the name of Critias, if still living B. C. 405–403, to have been little less than 100 years old.

Another list of these names is given by Proclus, in Timæum[3], which does not agree with the preceding except in part; Ἐξηκεστίδης, Σόλων, Δρωπίδης, Κριτίας ὁ πρῶτος: after which it derives the descent of Plato from this Critias, not through Κάλλαισχρος and the second Critias, but through Γλαύκων, another son of the first Critias, and a brother of Κάλλαισχρος—Γλαύκων, Περικτίονη, Πλάτων. This account is confirmed by Plato himself; so far at least that the second Critias (one of the speakers in his Χαρμίδης), is there described as Κριτίας ὁ Καλλαίσχρου[4]; and in the Timæus (in which also he is one of the speakers), he himself alludes to the first Critias as his own πάππος or grandfather[5], and to Dropides as his πρόπαππος, or great-grandfather[6]; and in the Χαρμίδης he speaks of Glauco (the other son of the first Critias according to Proclus) as his own uncle[7], and of Χαρμίδης (who gives name to the dialogue) as the son of this uncle, and his own cousin[8].

Now this Critias gives some account of his own age and of that of his grandfather the first Critias, from which, if the date of the Timæus were known, and the age of this one of the speakers in that dialogue were also known, we should be able to infer the probable date of the birth of the elder Critias. He tells us there that Critias his grandfather was about 90, when he himself was about 10 years old[9]. If so, he was 80 when this Critias the younger was born. Now the date of the Timæus was that of the institution of the Bendidea; and we hope to shew some time or other that the date of this institution was B. C. 446. Let us be permitted to assume that Critias, the speaker in this dialogue, was 60 years old at the time. If so, he was born about B. C. 506; and consequently Critias his grandfather about B. C. 586. And this being 27 years before the death of Solon, ἐφ' Ἡγεστράτου[10] B. C. 559, according to some of our authorities, it would be very possible and even probable that some of the moral and didactic poems of Solon would be addressed to this youth, his nephew: and two lines of one of his effusions of that kind, which appears to have been so addressed, are still extant.

εἰπέμεναι Κριτίᾳ ξανθότριχι πατρὸς ἀκούειν·
οὐ γὰρ ἁμαρτινόῳ πείσεται ἡγεμόνι[11].

With respect to the birth of Dropides the father of this Critias; if he

[3] A. 58 = 25 F.
[4] Opp. Pars i. 304. l. 3 = 153.
[5] Pars iii. Tom. ii. 10. 7.
[6] Ibid. l. 5.
[7] Pars i. Opp. i. 304, 305.
[8] Cf. also i. 312. 8 Χαρμίδης.
[9] Pars iii. Tom. ii. 10. 9.
[10] Plutarch, Vita, xxxii.
[11] Cf Aristotle, Opp. ii. 1375. 30. 6. Rhetorica, i. 15: Proclus in Timæum, loc. cit.: Scholia in Plat. Pars iii. Tom. ii. 424. in Timæum, 10. 4.

age of Solon is stated at 240 years before: Ἀπὸ Σόλωνος δὲ ὁμοῦ διακόσιά ἐστιν ἔτη καὶ τετταράκοντα ἐς τὸν νῦν παρόντα χρόνον[s]: and that would determine the age of Solon, in the opinion of Demosthenes, to B. C. 583.

The legislators of the Athenians at different times appear to have been these five; Theseus, Draco, Solon, Cleisthenes, Demetrius Phalereus[t]; and in after-times the Roman emperor Adrian. The legislation of the two last has a well ascertained historical date; and the fact of that of Solon and Draco some time or other is acknowledged also: but the observable circumstance in this enumeration is that no legislator appears to have been known of at Athens, earlier than Draco, nor any next after Draco but Solon. Νομοθέται says Suidas in voce, παρ' Ἀθηναίοις πρῶτος ἐγένετο Δράκων, καὶ μετ' αὐτὸν Σόλων, κ. τ. λ. The age of Draco therefore, and the interval of time between his legislation and that of Solon, will serve to determine that of Solon.

Now the legislation of Draco is commonly assigned to Ol. xxxix. B. C. 624–620: Τῇ γοῦν λθ' Ὀλυμπιάδι τοὺς νόμους ἔθετο γηραιὸς ὢν τοῖς Ἀθηναίοις[v]—Δράκων περὶ Ὀλυμπιάδα τριακοστὴν καὶ ἐννάτην εὑρίσκεται γεγονώς[x]. Eusebius and Jerome assign it to the first year of that Olympiad[y], or the next. And as to the interval between his legislation and that of Solon, though found stated even at one hundred years[z], Diodorus Siculus, quoted by Ulpian[a], could not have made it more

was archon B. C. 592, we may presume he could not have been younger at that time than the proper archontic age, which seems to have been the same at Athens as the consular one at Rome, 41 or 42[12]. If so, he could not have been born later than B. C. 633 or 634. If Solon was five years older than Dropides, he too must have been born about B. C. 639; and that would agree with the date of his death, as assumed supra, B. C. 559 —and his age at the time according to Diogenes Laertius[13], viz. 80: though Lucian[14] supposes him to have lived to be 100.

[s] De Falsa, xix. §. 281 = 420. 14. cf. Æschines contra Timarch. § 25: cf. Plutarch, Convivium, vii. 7: Hesychius, Ἀριθμόν: Schol. in Aristoph. ad Equites, 245 ὡς ὁμοῦ: Scholia in Æschin. Contra Tim. 52. 9. Reiskii, τὴν Σόλωνος εἰκόνα.

[t] Cf. Cicero, De Republica, ii. ad princ.

[v] Suidas, in voce. Cf. in Πέτασος.

[x] Tatian, contra Græcos, lxiii. Cf. Clemens Alex. Strom. i. xvi. § 80. p. 56. l. 29. Ed. *Klotz.* Leips. 1831.

[y] Chron. Arm. Lat. ii. 189, ad ann. 1396. Thes. Temporum, ad ann. 1393.

[z] Scholia in Æschin. Contra Timarchum, 32. 10, Reiskii.

[a] Scholia in Demosthenem, 275. in

12 Cf. our Origines Kalendariæ Italicæ, iii. 264 n.

13 Vita, Lib. i. 62.

14 Macrobii, 18. Opp. iii. 221.

than 47 years; and even that, as the text of Ulpian stands at present, probably does not represent the original statement of Diodorus—inasmuch as in the Scholia Augustana on the same passage[b] the reading is 27 years, and in Tzetzes[c], who seems to have referred to the same statement also, it is seven years: and the same interval or one little different from it being assigned by Eusebius and Jerome also[d], it may probably be assumed as very near the truth. On this principle, the legislation of Draco being fixed to Ol. xxxix. B. C. 624–620, that of Solon must be looked for sometime in Ol. xlvi. B. C. 596–592.

With respect to particular statements on this point, Cicero[e] supposes Solon and Pisistratus to have flourished together in the reign of Servius Tullius, B. C. 576–533: A. Gellius[f] dates the actual legislation of Solon in the 33rd of Tarquinius Priscus, B. C. 582—Demosthenes' date for the age of Solon also: the scholia on Demosthenes[g] date the time of Solon (i. e. the time when he was legislating) Ol. xlvii—which may be simply in error for xlvi: Suidas[h], both Ol. xlvii and Ol. lvi: Tatian, as his text is read at present[i], and as he is quoted by Eusebius[k], Ol. xl: though according to Clemens Alexandrinus[l] (the details of whose chronology appear to have been taken principally from Tatian), he must have done so Ol. xlvi. Plutarch tells us[m] Solon was appointed legislator when he was chosen archon, and that was the year after Philombrotus: Ἡιρέθη δ' ἄρχων μετὰ Φιλόμβροτον ὁμοῦ καὶ διαλλακτὴς καὶ νομοθέτης. And lastly, the year itself is assigned by Jerome, if not by Eusebius[n], Ol. xlvi. 2: and also by Sosicrates, Ol. xlvi. 3: Ἤκμαζε μὲν οὖν περὶ τὴν τεσσαρακοστὴν ἕκτην Ὀλυμπιάδα· ἧς τῷ τρίτῳ ἔτει ἦρξεν Ἀθηναίων, καθά φησι Σωσικράτης· ὅτε καὶ τίθησι τοὺς νόμους[o]. That the year of the legislation of Solon indeed was the year of

Timocr. 389. 26. Σόλωνα. Ed. Dove, 1828. Cf. Diodor. Fragm. Libr. ix.

[b] 765. 15.

[c] Chilias, v. 350. Histor. 5.

[d] Chron. Arm. Lat. Olymp. xlvii. 2. Jerome, Chron. ad Olymp. xlvi. 2.

[e] Brutus, 10, 39.

[f] xvii. 21.

[g] Contra Steph. i. 1120. 27.

[h] Σόλων Ἐξηκεστίδου.

[i] lxiii.

[k] Præp. Evangelica, x. 11. 496 A–C.

[l] Strom. i. xiv. p. 47. l. 26. § 65. Cf. Cyrill. contra Julianum, i. 12 D.

[m] Vita xiv. Cf. xix.

[n] Chron. Arm. Lat. ii. 193. ad ann. 1425. Jerome Thes. Temp. ad ann. 1422. Ol. xlvi. 2.

[o] Diogenes Laertius, Vita, i. 62.

his archonship is an acknowledged point: *Σόλωνα,* says Ælian[p], *αἱρετὸν Ἀθηναῖοι προείλοντο ἄρχειν αὐτοῖς· οὐ γὰρ κληρωτὸν τοῦτον. ἐπεὶ δὲ ἡρέθη, τά τε ἄλλα ἐκόσμησε τὴν πόλιν καὶ δὴ καὶ τοὺς νόμους τοὺς νῦν ἔτι φυλαττομένους συνέγραψεν αὐτοῖς*: and Plutarch supposes him to have been holding both offices, that of archon and that of legislator, simultaneously, at the date of his Septem Sapientum Convivium[q]: *Εἰπόντος δὲ τοῦ Χίλωνος ὡς Σόλων κατάρχεσθαι τοῦ λόγου δίκαιός ἐστιν, οὐ μόνον ὅτι πάντων προήκει καθ' ἡλικίαν καὶ τυγχάνει κατακείμενος πρῶτος, ἀλλ' ὅτι τὴν μεγίστην καὶ τελειοτάτην ἀρχὴν ἄρχει, νόμους Ἀθηναίοις θέμενος, κ', τ. λ.*

The archonship therefore, and consequently the legislation, of Solon being referrible only to one or the other of these two years, Ol. xlvi. 2 B. C. 594 or Ol. xlvi. 3 B. C. 593 —let us assume that the latter, which has the authority of Sosicrates, was the true one; and take our leave of this question at present, with one more observation: viz. that as Plutarch makes Philombrotus archon next before Solon, so does Philostratus Dropides his brother next after him: *Ἐπεὶ δὲ ἄριστα μὲν ἦν πεπαιδευμένος γνώμας δὲ πλείστας ἑρμηνεύων, εἰς Δρωπίδην δ' ἀναφέρων, ὃς μετὰ Σόλωνα Ἀθηναίων ἦρξεν*[r]. And as Diogenes Laertius, in his Life of Anacharsis[s], partly after Sosicrates partly after Hermippus, dates the arrival of that philosopher at Athens in the xlviith Olympiad, yet *ἐπὶ ἄρχοντος Εὐκράτους* also (that is, B. C. 591), we have probably the archontic years of four archons, one after another, including Solon's, which may be arranged as follows:

Philombrotus,	Ol. xlvi. 2	B. C. 594,	Plutarch.
Solon,	— 3	— 593,	Sosicrates.
Dropides,	— 4	— 592,	Philostratus.
Eucrates,	Ol. xlvii. 1	— 591*,	Sosicrates.

* The name of Simon or Simonides might be added to the above list, as that of the archon B. C. 590, the first year of the first sacred war, as we hope to see hereafter. Cf. also the schol. on Aristoph. ad Pacem, 347. *Στιβάδας ἃς ἔλαχεν.*

p Variæ, viii. 10: cf. 16.

q Cap. vii.

r Vitæ Soph. i. 504 B. Critias.

s Vita, lib. i. cap. viii. 101.

SECTION III. — *On the Epoch of the Lunar Correction of Solon, and on its derivation from the Primitive Equable year.*

The third year of the xlvith Olympiad according to the Olympic reckoning would begin at midsummer B. C. 594, and end at midsummer B. C. 593. The first six months of B. C. 593, as much as the last six of B. C. 594, would consequently belong to this year; so that, whether the archontic year of Solon is dated from the summer solstice B. C. 594, or from the winter solstice B. C. 593, it must have fallen out in Ol. xlvi. 3. But the archontic year of Solon would no doubt begin where the civil year at Athens for the time being was beginning also; and it would be gratuitous to assume that, because this year, B. C. 432 or 431, was beginning at midsummer, it must have been doing so B. C. 594 or 593. If it can be shewn (as we believe it may, and as we trust it will be, in due time) that the official year at Athens was still beginning in the winter B.C. 431, no one, we apprehend, will doubt whether it was beginning in the winter B. C. 593, or not.

The truth indeed is, that the civil year of the Athenians in the time of Solon must have begun just where the primitive year was beginning also; for that this primitive year was the only kind of civil year, in actual use among the Athenians as well as the rest of the Greeks, down to the time of Solon, after what has been shewn in the preceding Parts of these Origines, and what we trust will be shewn in this Part, does not admit of a question: and we have only to look at our perpetual calendar of the Equable year, B. C. 593, to see that it was then beginning in the winter. The archonship therefore and the legislation of Solon having been determined, from testimony, to Ol. xlvi. 3, we must understand this date of the middle point of that year, B. C. 593.

There is no reason (from testimony at least) to suppose that the work of legislation occupied Solon more than one year; i. e. that he did not both begin and complete it in the year of his archonship. It may well however be questioned whether any of his laws and constitutions, (and certainly many which it would be easy to specify,) though framed and published in the year of his archonship—would be expected to come into operation till the year after it. Some προθεσμία would require to be defined by the new code itself, up to which the old laws should continue in force, and after which the new should begin to take effect ; and this could be nothing so properly as the year Μετὰ Σόλωνα ἄρχοντα: like the notable προθεσμία of after-times, the year Μετ' Εὐκλείδην ἄρχοντα. If a προθεσμία of this kind would be necessary in numberless other instances, it would be still more proper with respect to the change of style, and the proposed substitution of an entirely new calendar for that which was before in use: and if such a change had not been already carried into effect before Solon came into office, it could neither be intended nor expected to come into force until the end of that year, and the beginning of the next, at least. The year of the archonship and legislation of Solon consequently might have been B. C. 593 ; but that of the actual adoption of the new calendar must have been B. C. 592. Let us proceed then to consider in what manner the Primitive Calendar for the same point of time comes in, to illustrate and verify this conclusion.

It must be admitted by every one to be the most natural and probable presumption of the course of proceeding in a case like this, which could be conceived *a priori,* that, in carrying this change of style into effect, and substituting the new civil reckoning for the old, an abrupt and violent transition would if possible be avoided ; and that a conjuncture of circumstances would purposely be chosen, when the new style might take up and continue the old, without any apparent interruption, and every thing might seem to begin and to go on at first, just as it had always done until then. It is certain that the change in the calendar made no change in the reckoning of day and night, according to the old rule from sunset to sunset. The first new year's day then of the new style could scarcely have differed from the old new year's day, or what would still have been the regular new year's day—according to the style before in use.

Now, according to our general Lunar Calendar, Period xii, Cycle iv. 11, the first of Nisan is seen to have fallen March 29 at midnight B. C. 593 : and that is confirmed by the solar eclipse at the next lunation, April 27, 11.45 P. M. for the meridian of Paris, according to Pingré. The xith new moon of the same year, the new moon of Sebat, bore date consequently Jan. 18 at midnight B. C. 592. And this too, as we hope to see hereafter, is confirmed by calculation: which gives the new moon of the same month and the same year, for the meridian of the ancient Athens, only about eight hours later.

If now we turn to the calendar of the primitive Equable year—we find the primitive Thoth, or primitive Gamelion, reckoned according to the primitive rule of the noctidiurnal cycle, Æra cyclica, 3415, falling on Jan. 18 at 18 hours, B. C. 592. The mean or the true new moon then, and the first of the equable Gamelion, were falling at this time almost exactly alike: so that the concurrence of circumstances, of which we spoke, as the most desirable which could have been imagined with a view to the readiest, the easiest, the most natural and imperceptible transition of the old solar calendar into the new lunar one, was actually now holding good. The new style would thus take up and continue the old. The new year's day would be common to both; and even the first month of the one, from beginning to end, would scarcely differ from the first of the other.

This concurrence of circumstances however, the archonship and legislation of Solon in one year; the change of style and the adoption of the lunar reckoning of civil time instead of the old solar one in the next; the inosculation of the new reckoning with the old, by means of a common new year's day, the first of Gamelion in both alike; could not have been produced by chance. The matter of fact, the actual adoption of a lunar calendar of a certain kind at Athens, on this very day, the first of the primitive Thoth, Æra cyclica 3415, Jan. 18 at 18 hours from midnight B. C. 592—account for the fact as we may—in itself is unquestionable. It is proved by a number of extant dates, derived from this calendar, which have been handed down in terms; by means of which we ascend upwards to this, as the epoch of all. It is confirmed by the analogy of every other Type of the Hellenic Lunar calendar in general, later than this, yet similar to it, and derived from the primitive Solar calendar exactly by the same process. It is confirmed also by the Metonic correction of this lunar calendar of Solon itself; as we hope to see in due time. These various corroborative proofs can leave no doubt that the actual date of the correction of Solon must have been this day and this year, Jan. 18 at 18 hours, or Jan. 19 at midnight, B.C. 592. If so, that the first day of this new calendar at Athens must have been the first day of the old solar calendar, Æra cyclica 3415, is equally certain; and yet, as every one must allow, it is too critical a coincidence not to have been the effect of design.

It follows too from these facts, that the first lunar calendar of the Athenians did not bear date from the phasis, but from the conjunction or change. The first day of the first lunar month in this calendar was the first day of the natural lunar month also; dated whether from the mean new moon or from the true. The opinions of chronologers have been divided on this point; and so far it cannot be considered unimportant, to have arrived at some certainty about it. Not that it makes any difference to the essence of a lunar calendar, from what state of the lunar phasis it sets out, provided it both sets out from this and returns to this perpetually. No one however will deny that the most natural epoch of the lunar revolution is the conjunction [v]; or that the civil lunar month, professing to be the type and representative of the natural, could not select a more appropriate point in the whole synodic revolution, for its own origination, than the change or conjunction. We have no doubt ourselves that this coincidence was purposely regarded by Solon; and was one of his reasons for fixing on the first of Gamelion, Æra cyc. 3415, Jan. 19, B. C. 592, as the epoch of his correction: especially as the same coincidence holds good of all the other corrections too, later than his, yet similarly derived from the preexisting solar calendar, of which we shall have to give an account.

[v] Cf. our Fasti Catholici, i. 62.

CHAPTER II.

On the proper and characteristic Cycle of the Lunar Correction of Solon.

SECTION I.—*On the probable motive and final end of the Correction of Solon.*

The religious feeling, which, as being natural to mankind, is generally most characteristic of the infancy of society, and the instinctive conviction produced thereby, of the control of all human affairs by the Providence of God, and of the dependence of all human plans and counsels upon the Divine blessing and cooperation, were still so fresh and unimpaired among the Greeks in the time of Solon, that even without any testimony to the fact itself it might have been taken for granted, on the strength of its antecedent probability, that as an indispensable preliminary to the very extensive change in the laws and customs of Athens which he was contemplating in other respects, and especially to this, of the style or calendar, which had never been disturbed until then, and in the midst of every thing which could be considered old and prescriptive of its kind, was the oldest and most prescriptive of all—he would take the precaution of consulting the gods, through some one or other of the modes of communicating with them, which existed in his time, and particularly through the oracle at Delphi.

And yet we are not destitute of testimony apparently to the fact itself. From something which is still read in Cicero de Legibus[x], it may be surmised that on some occasion when the ceremonies of religion among the Athenians were under consideration, the Pythian oracle was consulted: Deinceps in lege est ut de ritibus patriis colantur optimi; de quo, cum consulerent Athenienses Apollinem Pythium quas potissimum religiones tenerent, oraculum editum est, eas quæ essent in more majorum. quo cum iterum venissent, majorumque morem dixissent sæpe esse mutatum, quæsivissent-

[x] ii. 16, 40. Cf. Photii Lex. and Suidas, in πατρῴων. Porphyry, De Abstin. ii. 59.

que quem morem potissimum sequerentur e variis; respondit optimum.

There is also a passage in Geminus which plainly implies that an oracle was some time or other given to the ancient Greeks, enjoining a ritual rule, the literal observance of which must have entailed an entire change of the preexisting calendar, if that was still the primitive one. And though this passage is well known to the learned, yet as it has never been cited, so far as we know, in reference to this question, of the cause and motive of the first correction of the civil calendar among the Greeks on a large scale, we shall perhaps be excused if we produce it here[y].

Πρόθεσις γὰρ ἦν τοῖς ἀρχαίοις τοὺς μὲν μῆνας ἄγειν κατὰ σελήνην, τοὺς δὲ ἐνιαυτοὺς καθ' ἥλιον. τὸ γὰρ ὑπὸ τῶν νόμων καὶ τῶν χρησμῶν παραγγελλόμενον, τὸ θύειν κατὰ γ' (ἤγουν τὰ πάτρια) μῆνας ἡμέρας ἐνιαυτούς· τοῦτο διέλαβον ἅπαντες οἱ Ἕλληνες τὸ τοὺς μὲν ἐνιαυτοὺς συμφώνως ἄγειν τῷ ἡλίῳ, τὰς δὲ ἡμέρας καὶ τοὺς μῆνας τῇ σελήνῃ. ἔστι δὲ τὸ μὲν καθ' ἥλιον ἄγειν τοὺς ἐνιαυτοὺς τὸ περὶ τὰς αὐτὰς ὥρας τοῦ ἐνιαυτοῦ τὰς αὐτὰς θυσίας τοῖς θεοῖς ἐπιτελεῖσθαι· καὶ τὴν μὲν ἐαρινὴν θυσίαν διαπαντὸς κατὰ τὸ ἔαρ συντελεῖσθαι, τὴν δὲ θερινὴν κατὰ τὸ θέρος· ὁμοίως δὲ καὶ κατὰ τοὺς λοιποὺς καιροὺς τοῦ ἔτους τὰς αὐτὰς θυσίας πίπτειν· τοῦτο γὰρ ὑπέλαβον προσηνὲς καὶ κεχαρισμένον εἶναι τοῖς θεοῖς. τοῦτο δ' ἄλλως οὐκ ἂν δύναιτο γενέσθαι εἰ μὴ αἱ τροπαὶ καὶ αἱ ἰσημερίαι περὶ τοὺς αὐτοὺς τόπους γίγνοιντο. τὸ δὲ κατὰ σελήνην ἄγειν τὰς ἡμέρας τοιοῦτόν ἐστι· τὸ ἀκολούθως τοῖς τῆς σελήνης φωτισμοῖς τὰς προσηγορίας τῶν ἡμερῶν γίνεσθαι. ἀπὸ γὰρ τῶν τῆς σελήνης φωτισμῶν αἱ προσηγορίαι τῶν ἡμερῶν κατωνομάσθησαν. ἐν ᾗ μὲν γὰρ ἡμέρᾳ νέα ἡ σελήνη φαίνεται, κατὰ συναλοιφὴν νεομηνία προσηγορεύθη· ἐν ᾗ δὲ ἡμέρᾳ τὴν δευτέραν φάσιν ποιεῖται, δευτέραν προσηγόρευσαν· τὴν δὲ κατὰ μέσον τοῦ μηνὸς γινομένην φάσιν τῆς σελήνης ἀπὸ αὐτοῦ τοῦ συμβαίνοντος διχομηνίαν ἐκάλεσαν . . . . ὅθεν καὶ τὴν τριακοστὴν τοῦ μηνὸς ἡμέραν ἐσχάτην οὖσαν ἀπὸ αὐτοῦ τοῦ συμβαίνοντος τριακάδα ἐκάλεσαν . . . . ὅταν οὖν καὶ οἱ ἐνιαυτοὶ ἀκριβῶς ἄγωνται καθ' ἥλιον καὶ οἱ μῆνες καὶ αἱ ἡμέραι κατὰ σελήνην, τότε νομίζουσιν οἱ Ἕλληνες κατὰ τὰ πάτρια θύειν· τοῦτο δ' ἐστι κατὰ τοὺς αὐτοὺς καιροὺς τοῦ ἐνιαυτοῦ τὰς αὐτὰς θυσίας τοῖς θεοῖς συντελεῖσθαι.

There is no reason why the *ἀρχαῖοι* alluded to here should

[y] Cap. vi. Uranologium, 32 A–D–33 B.

not be understood of Solon and his contemporaries; than whom in the time of Geminus none of the Greeks could have been more properly styled "the ancients." If so, that an oracle was some time or other given to them, enjoining a ritual observance of a certain kind, which could not have been observed before, requires no proof. This rule, it appears, was τὸ θύειν τὰ πάτρια κατὰ γ', μῆνας ἡμέρας ἐνιαυτούς: with respect to the meaning of which direction, had we been left to ourselves, we might have supposed it enjoined the continued observance of the primitive equable year and month, for the ceremonies of religion as well as for every thing else, on a principle analogous to that which regulated the ritual calendar of the Egyptians, and of which as contra-distinguished by this very principle from that of the Greeks, Geminus proceeds to give an account[z]. Or it might have been supposed the oracle was prescribing a fixed solar year, instead of the preexisting moveable one, yet retaining the solar month; and therefore was enjoining a change in the reckoning of annual time, but not necessarily in that of menstrual. But the actual construction put upon it by the Greeks, and illustrated by their practice every where, and therefore what it must have been understood from the first to mean, according to Geminus, was *this*, That, for the regulation of the ritual calendar the years should be reckoned by *one* rule, the months and the days by *another*; the years by the sun, the months and the days by the moon: the years by the sun in such a sense and to such an effect as always to begin and to end at the same seasons of the natural year, the months and days by the moon in such a manner and to such an effect as to follow the moon, and to derive their proper distinctions and appellations from the different appearances of the moon in the course of one and the same revolution*.

* Such is the explanation which Geminus himself has given of this part of the oracle, τὸ θύειν τὰ πάτρια κατὰ ἡμέρας καὶ μῆνας, lunar days and lunar months: which however, in our opinion, misrepresents its real meaning. This phrase of τὸ ἄγειν τὰς ἡμέρας καὶ τοὺς μῆνας κατὰ σελήνην is simply analogous to that of τὸ ἄγειν τοὺς ἐνιαυτοὺς καθ' ἥλιον: and as the latter is the common idiomatic phrase in Greek for the reckoning of annual time according to some form or other of the solar year, so is the

[z] Uranologium, 33 C. cap. vi. Cf. our Fasti Catholici, ii. 391 sqq.: 446 sqq.

It is self-evident therefore that, if the preexisting civil year was simply the equable solar one, such a rule and observance as this, prescribed at this time, in the name and with the authority of religion, must have entailed a total change in the calendar.

With respect then to the present question of the probable moving cause and final end of the Correction of Solon, it may reasonably be inferred from these statements of Geminus, that if the change of the calendar, which must have taken place some time or other among the ancient Greeks, was not made without any pretext whatsoever, one of the motives to it and one of the objects proposed by it, and very probably the motive and object professed and assigned at the time, must have been that which appears on the face of this account; viz. That the rites and ceremonies which the common sense of propriety had suggested, and the laws and customs of society had sanctioned, or were about to sanction, as the fittest for such and such seasons of the natural year, should be confined to those seasons perpetually. On this natural sense of propriety we had occasion to make some remarks in the last published Part of the present work [a]. There can be no question that the connection of times and seasons with their proper ceremonies is founded in the reason of things; and that the common sense of mankind has instinctively

former for that of noctidiurnal and menstrual, according to some form or other of the lunar year. The lunar year is properly the lunar month. These two parts of the same oracle enjoined simply one, the adoption of an annual reckoning, which should be solar, in the sense of some fixed solar year; and the other, that of a noctidiurnal and menstrual one which should be lunar. It did not prescribe or intend to prescribe the style of the calendar, properly so called, whether solar or lunar; that is, the distinctions and names of the days *inter se*. And though it is true that there were two days in the Greek lunar month which borrowed their names from the moon—the first, which took its name from the new moon (*νουμηνία*), and the fifteenth, the *πανσέληνον*, which took its name from the full—there were no more, unless perhaps we add the 8th, or the 23rd, each of them called after the half moon, the *διχοτόμος*. The style derived its distinctions from the order or place of the days, as parts of the three divisions of the month, *πρώτη ἱσταμένου*, &c., *πρώτη μεσοῦντος*, &c., *δεκάτη φθίνοντος*, &c. respectively.

[a] Origines Kalendariæ Italicæ, i. 436.

acted upon it more or less every where. And though from the nature of the cyclical year, it was not possible for any observance in that to be perpetually restricted to the same month and the same day of the month, and yet to the same season of the natural year; it was possible even in that for a given observance, once attached to a particular season, to continue attached to it ever after. Nor does it follow that, because there might have been no connection of this kind between ceremonies and seasons in the calendar previously in use, Solon himself might not have thought there ought to be one; nor can it reasonably be doubted that when he was engaged in his office of legislator he must have proposed to institute, and must actually have instituted, numerous observances, the very nature and design of which would require them to be confined to some one season of the year.

The primitive solar year too had its proper lunar cycle; which nature itself must have adapted to it for the very purpose of accompanying it perpetually; and the uninterrupted use of which among mankind from the beginning of things down to an historical point of time, we have ourselves confirmed by the necessary proofs [b]. We hope also to shew that this natural lunar cycle of the primitive solar year was well known to Solon; though whether it was actually still in use among the ancient Greeks down to his time, is a question which must be reserved for the second Part of our work. It is manifest however that if this cycle was previously in use at Athens along with the equable solar year, had Solon attached his ritual calendar to *this* cycle, *that* would have been no correction of the preexisting civil calendar; but the very thing necessary to render it perpetual. And to have instituted this cycle for the first time, and along with it its natural solar year, would not have been to fulfil the injunctions of the oracle; for the lunar reckoning of the primitive calendar could no more be confined to the same season of the natural year than the solar.

It is manifest therefore that if we have rightly collected

[b] Fasti Catholici, i. 97 sqq.; 559 sqq.: ii. 489; 468 sqq.: iv. 368 sqq. Prolegomena to the Origines Kal. Italicæ, pag. xciii sqq.

from Geminus the proper object and purpose of the reformation of the ritual calendar of the Athenians some time or other made, its author could have had no alternative but that of discarding the preexisting equable year and substituting some other in its stead. And here we consider ourselves free to assume that the principle of the mean Julian year, in contradistinction to that of the equable, must have been well known to Solon. It has been shewn that among the Egyptians it was both known in theory and applied in practice, 1256 years before the time of Solon[c]; and it will be shewn, we hope, in the second Part of the present work, that among the ancient Greeks it was both known and reduced to practice, 750 years before his time. We are at liberty too to assume that in the opinion of Solon there was no difference between the mean Julian year and the mean natural; because that seems to have been the belief of the ancient Egyptians before him, and of many of the Greeks after him[d]; and neither he nor the rest of the Greeks had any opinion of this kind, which was not ultimately derived from the Egyptians. Consequently that to substitute the mean Julian year for the primitive equable year would be in effect and practice to substitute the mean natural year itself.

With respect therefore to the first part of the oracular injunction, *τὸ θύειν τὰ πάτρια κατ' ἐνιαυτοὺς,* it is very conceivable Solon might think he could not fulfil it more effectually, than by appointing the annual time of his calendar to be regulated on the principle of the Julian reckoning. With respect to the other part, *τὸ θύειν τὰ πάτρια κατὰ μῆνας καὶ ἡμέρας* also, if that was understood to prescribe a noctidiurnal and menstrual reckoning according to the moon, it is manifest that the first question which we have to consider is *this,* What rule of noctidiurnal and menstrual reckoning, according to the moon, was the best adapted to work together with an annual reckoning according to the sun? i. e. on the principle of the mean Julian year, as altogether the same with the mean natural. And this is in other words the question of the proper lunar cycle of the Julian year: in

[c] Fasti Catholici, i. 551 sqq: iii. 236 sqq.; 299 sqq.: iv. 171 sqq.
[d] Fasti Catholici, i. 74, *n.* Origines Kal. Ital. iv. 8, 14. 36, *n.* 48. 179, *n.*

answer to which, the observations and explanations which we had occasion to enter upon in our Fasti Catholici[e], would have been much to the point *here*, had they not been anticipated *there*. It is sufficient at present to refer to them; and should it appear from those explanations that there was one kind of Lunar Cycle which, according to its own principles, was adapted the most critically of all to the Julian year, and in the time of Solon had long been familiar to the Greeks, and was well understood by them both in theory and in practice, and was recommended not only by its antiquity and the sacredness of character derived from that circumstance, but by its simplicity, and the readiness with which it might be applied to its proper purpose; we need not be surprised if *that* was the kind of Cycle which he himself resolved to adopt.

But as this is a question which, as thus stated, seems to concern the order of discovery among the ancient Greeks, directed to this one purpose, of adjusting the course of the moon to that of the sun, it may be worth our while to reserve the further explanation of this point, until we have briefly inquired into the account which the later Greeks have given of this process among their ancestors. And as its different steps have been most fully and circumstantially described by Censorinus, in his elegant little treatise, *De Die Natali*[f], we shall be content in the first instance to refer to him.

SECTION II.—*On the different Lunar and Solar Cycles supposed to have been in use at different times among the Greeks.*

The first which Censorinus mentions is supposed to have been a cycle of two years; the principle of which was to intercalate a month every other year: and hence its name in Greek—nominally that of the τριετηρὶς, more properly that of the διετηρίς. Idque tempus τριετηρίδα adpellabant, quod tertio quoque anno interkalabatur, quamvis biennii circuitus et revera διετηρὶς esset. unde mysteria, quæ Libero patri alternis fiunt annis, trieterica a poëtis finguntur.

The next in the order of trial is supposed to have been the

[e] Vol. i. 95–107: 108–112. [f] Cap. xviii.

double of this; nominally the πενταετηρὶς, in reality the τετραετηρίς. Postea cognito errore hoc tempus duplicaverunt, et τετραετηρίδα fecerunt. sed eam quod quinto quoque anno redibat πενταετηρίδα nominabant, qui (*corr.* quia) annus magnus ex quadriennio commodior visus est, ut annus solis constaret ex diebus CCCLX et diei parte circiter quarta, quæ unum in quadriennio diem conficeret.

The third in the order of discovery, and order of experiment, is described as obtained by doubling the second, as the second was by doubling the first; an ἐνναετηρὶς nominally, as that was a πενταετηρὶς, an ὀκταετηρὶς in reality, as the other was a τετραετηρίς. Hoc quoque tempus, quod ad solis modo cursum nec ad lunæ congruere videbatur, duplicatum est, et ὀκταετηρὶς facta, quæ tunc ἐνναετηρὶς vocitata, quia primus ejus annus nono quoque anno redibat. hunc circuitum verum magnum annum esse pleraque Græcia existimavit: quod ex annis vertentibus solidis constaret, ut proprie in anno magno fieri par est. nam dies (*corrige* menses) sunt solidi uno minus centum, annique vertentes solidi octo.

And here we may stop with our review of the process—according to this account at least—though Censorinus passes on to much longer and more complicated cycles, of the same kind as the ὀκταετηρὶς in general, and intended for the same purpose, but later in the order of discovery; the cycle of 19 years, the cycle of 59 years, the cycle of 72 years, the cycle of 76 years, and the cycle of 304 years.

Section III.—*Observations on the preceding statements.*

With respect to the above representation of the order and course of proceeding in adjusting the lunar to the solar momenta, from its first beginnings to its final consummation, we do not hesitate to consider the first two cycles of this kind, the διετηρὶς and the τετραετηρὶς, which it supposes to have been first tried, and as such to have had a real existence some time or other, to be purely imaginary and fictitious; though it should be observed, for the credit of Censorinus, that in recognising the first and simplest of the two, as an actual cycle of its kind, he might have had the authority of Geminus, who does just the same[g]: Οἱ μὲν οὖν

[g] Cap. vi. Uranolog. 34 D. E.

ἀρχαῖοι τοὺς μῆνας τριακονθημέρους ἦγον, τοὺς δὲ ἐμβολίμους παρ' ἐνιαυτόν. But the truth is, as neither he nor Censorinus assigns any authority for his statement, as neither of them appeals to any known cycle of this kind—we must judge of the credibility of their statements from their own intrinsic probability; and if they are repugnant to the reason of things, and unsupported by testimony or matter of fact, and presuppose an ignorance of the true lunar and solar momenta, and of their relations to each other, which never was true even of the ancient Greeks, much less of their masters and teachers the Egyptians; we are at liberty to reject them. These accounts must be treated as belonging to the history of lunar and solar cycles in *theory*, not in *practice*. They are descriptions of the different contrivances which might have occurred, and might have been employed, one after another, were men supposed to have begun with the rudest and simplest, before they attained to the most complex and artificial, but the most complete and perfect. They must be set down to the same category as the accounts of the most ancient forms of the year, which are also on record [h]. Certain it is at least, that neither the first lunar correction of the primitive civil calendar which was ever made among the Greeks, nor any of the rest which were afterwards made, over a space of 125 years, was regulated by any such imperfect cycles as these; and we may even go further, and lay it down as a proposition, which cannot be contradicted by any known matter of fact, that, excepting the natural lunar cycle of the equable solar year, no lunar cycle was ever associated with the civil solar year among the Greeks, but one of these three, the octaëteric, the 59 years' cycle, and the 19 years' cycle, commonly called the Metonic, under which we include the Callippic of 76 years.

It is very observable however that even these imaginary cycles, the first and rudest of their kind, must yet have been conceived and proposed as the beginning of a series of attempts, the object of which was to adjust the lunar year to the solar, in the sense of the Julian year, not of the equable. The διετηρὶς, according to this account, was doubled to get the τετραετηρίς; and the τετραετηρὶς was simply the

[h] Fasti Catholici, ii. 137.

cycle of the Julian leap-year. This distinction is not unimportant. For as all these cycles, in this theoretical view of their origin, were obtained one from another by the very same process in each instance, (the τετραετηρὶς by doubling the διετηρὶς, and the ὀκταετηρὶς by doubling the τετραετηρὶς,) the effect of the other two was summed up and consummated in the ὀκταετηρίς: and the account of this whole process, imaginary as it is, illustrates and confirms our position, that the solar year, in the sense of the Julian, must have become known, before any of these attempts to find out its proper lunar cycle began to be made. No one indeed who was aware that eight Julian years, reckoned from any assignable epoch, must contain two cycles of the Julian leap-year, and two cycles of the Julian leap-year, reckoned from any epoch whatsoever, must contain 2922 days and nights; and who was also aware that eight lunar years, like those of one octaëteric cycle, or 99 lunar months of the standard assumed in that cycle, reckoned from any epoch whatsoever, must contain 2922 days and nights also; could think of doubting which must have been the older of the two, the Julian solar year, or the octaëteric cycle,—and which must have been imagined for the sake of the other, and which must have been accommodated to the other—the Julian solar year to the octaëteric lunar cycle, or the octaëteric lunar cycle to the Julian solar year. It is no wonder therefore that howsoever far back, even among the Greeks, the knowledge or use of the octaëteric cycle may be found to go, the knowledge in theory, and the use in practice, of the Julian solar year go still further back; and that the first Julian calendar which our researches bring to light, even among the ancient Greeks, is many years older than the first octaëteric correction, discoverable among them also.

Section IV.—*On the antiquity and the first author of the Octaëteric Cycle among the Greeks.*

In the actual order then of the attempts to discover the natural lunar cycle of the natural solar year, in the sense of the Julian, the first as well as the simplest and most elementary contrivance, with such an object in view, must have been the octaëteric cycle. And it confirms this conclusion that the other two cycles also, to which we alluded *supra* as the only ones, besides the octaëteric, which had an actual existence among the Greeks, were not only later than the octaëteric, but derivable from it, and originally intended as corrections and improvements of it; and yet had the same object in view; that of adjusting the lunar year to the solar in the sense of the Julian.

With respect then to the real antiquity and the true first author of this very old and primitive lunar cycle, it is a question which must be reserved at present. It belongs to the history of the Primitive Calendar among the Greeks, before the time of Solon. All that we shall say, in reference to it, here is, that ancient as this particular cycle might have appeared to Geminus or to Censorinus, even though no older than Solon, yet as referred to its real origin, it could scarcely have appeared less ancient even in the eyes of Solon and of his contemporaries. Numa Pompilius was 120 years older than Solon, and the principle of this cycle was perfectly familiar to him [i]; yet there is no reason to suppose even he discovered it for himself: and in fact it was more than 500 years older than Numa.

It is worthy of remark however that, to judge from the accounts which the later Greeks have given of the history of this cycle, they must have taken it for granted, whether they say it or not, that it was eminently an invention of their own country, and some time or other first came into being in ancient Greece. And howsoever this belief may have been perpetuated among them, it cannot be denied that there was good foundation for it; insomuch as the first actual correction of this kind, which the history of the Primitive Calendar brings to light, did take its rise in Greece, and was the work of a Greek: and there were many other cycles of the same kind, younger indeed than this, but much older than Solon, which also came into being in Greece, and were the work of Greeks. It is clear however even from their own accounts, (such at least as are known to us at present,) that tradition in later times could not trace this cycle, with any certainty, beyond the age of Solon, nor even so far. Hanc ὀκταετηρίδα, observes Censorinus [k], vulgo cre-

[i] Cf. our Origines Kal. Italicæ, i. 275. [k] De Die, loc. cit. (xviii.)

ditum est ab Eudoxo Cnidio institutam. sed hanc Cleostratum Tenedium primum ferunt composuisse, et postea alios aliter; qui mensibus varie interkalandis suas ὀκταετηρίδας protulerunt, ut fecit Harpalus, Nauteles, Mnesistratus, item alii, in queis Dositheus, cujus maxime ὀκταετηρὶς Eudoxi inscribitur. Eudoxus was 200 years younger than Solon; and yet common opinion it seems considered him to have been the first author of the octaëteric cycle: and even Censorinus himself, to judge from his language in this passage, might have been under the persuasion that though many cycles of the same kind had been elaborated and proposed at different times by subsequent authors, the first of the kind had been constructed by Cleostratus of Tenedos; an ancient name indeed in the time of Censorinus, but fifty years at least younger than Solon *.

* Cleostratus is mentioned by Censorinus only in this instance. Theophrastus alludes to him [1] as an older astronomer than Meton; who had watched the moon from the summits of mount Ida in Troas: and an ἀστρολογία attributed to him is recognised by Athenæus [2]. It may be inferred from Pliny [3] too that he must have written and published something on the sphere; and probably was the author of a Parapegma.

With respect to his time, Pliny [3] makes him later than Anaximander, whose age he dates Ol. lviii. (B. C. 548). But there is a passage in the Periplus, attributed to Skylax of Caryanda, which speaks of him as a contemporary of the author; and therefore if this was truly the Skylax mentioned by Herodotus [4], proves him to have lived and flourished in the reign of Darius, B. C. 522 to B. C. 496. Describing Troas, this author observes [5]; *Καὶ νῆσος κατὰ ταῦτα κεῖται Τένεδος, καὶ λιμὴν, ὅθεν Κλεόστρατος ὁ ἀστρολόγος ἔστιν* : *ἔστιν* not *ἦν, is* not *was*; implying that he was living at that very time. The genuineness of this Periplus has been disputed in modern times; yet this allusion to one, who was certainly as old as Skylax of Caryanda himself, is a strong internal argument that the work is really, what it is commonly believed to have been, the production of Skylax, the contemporary of Darius Hystaspis. *Τῆς δὲ ἀρχαιότητος τοῦ ἀνδρὸς*, observes an auctor incertus, quoted in the Geographi Minores [6], *ἐναργὲς γνώρισμα τὸ μήτε Ἀλέξανδρον εἰδέναι τὸν Μακεδόνων βασιλέα, μήτε τὸν ὀλίγον ἔμπροσθεν ἐκείνου τοῦ χρόνου·* . . . And afterwards, *Καὶ Αἴλιος Διονύσιος ἐν τῷ περὶ Ἀλεξανδρείας βιβλίῳ πρώτῳ φησὶν ὅτι Δαρείῳ προσεφώνησε Σκύλαξ τὸ φρόντισμα.*

The ὀκταετηρὶς of Solon, first brought into existence B. C. 592, was

1 Fragm. vi.: De Signis, cap. i. § 4. 2 vii. 7. 3 H. N. ii. 6.
4 iv. 44. 5 Geographi Minores, i. ed. Huds.: Skylax Caryandensis, pag. 35.
6 In Proœmio.

just ten of its proper cycles, 80 years in all, old B. C. 512; and at that particular period of its decursus, by virtue of the Lunar Precession, or tendency of the true lunar dates to rise on those of the calendar, inherent in the structure of the octaëteric cycle, (of which an account will be given by and by,) the true new moons were beginning to fall on the 16th of the month, and the true full moons on the first of the month: so that the calendar dates of the *νουμηνίαι* all through this cycle, B. C. 512–504, were really those of the *πανσέληνα*, and *vice versa* those of the *πανσέληνα* were really those of the new moons. The stated date of the first of Gamelion, in the third year of the cycle of Solon, was December 28; and in the third year of this xith cycle, Gamelion 1 was falling Dec. 28 B. C. 511; which is proved to have been the date of the full moon by the lunar eclipse in Pingré, Nov. 29, at 3.30 A. M. for the meridian of Paris, last before.

This term Dec. 28 is remarkable, as being the date of the winter solstice in the sphere of Eudoxus; and we shall probably see reason hereafter to conclude that the *ὀκταετηρὶς* attributed to him, as republished by Dositheus, was purposely attached to Dec. 28. There is no doubt that Cleostratus was the author of an *ὀκταετηρὶς* too; and it is very observable that as the only three such cycles, which are particularly specified by Censorinus, are the *ὀκταετηρὶς* of Cleostratus, the *ὀκταετηρὶς* of Eudoxus, and the *ὀκταετηρὶς* of Dositheus; so it is clearly implied, in his mode of speaking of them respectively, that those three in particular must have had something in common: so much so, that Dositheus' is implied to have been a republication of Eudoxus', and Eudoxus' a republication of Cleostratus'; but that Cleostratus' was the first of its kind, and the oldest of the three. And this would be explained, if his too bore date on this Julian term December 28, as well as theirs.

In the absence of positive testimony we have only a conjecture to propose, on such a question of fact as this. But it is far from improbable, that, if Cleostratus was really a contemporary of Skylax of Caryanda, and of Darius Hystaspis, he might be labouring on the construction of his Octaëteris in the xith cycle of that of Solon, B. C. 512–504, when the full moons, as we have explained, were falling in the seats of the new, all round the calendar; and that he might take advantage of this coincidence to publish the cycle of Solon afresh, attached to this term of Dec. 28, which in his time was the date of the mean winter solstice, especially as reckoned, by the primitive rule of the noctidiurnal cycle, from Dec. 27, at 18 hours after midnight. The winter solstice in his opinion might be the natural epoch of such a cycle; more so at least than that to which it was attached in the calendar of Solon, Jan. 19; which was not remarkable as a natural term of any kind, and had been selected simply because of its coincidence with the first of the Primitive Thoth for the time being. If he made choice of the winter solstice for this purpose, that might lead him to consider the rest of the cardinal points, and the ingresses into the different signs in general; and would be the best explanation which could be assigned at present of the sphere, or the Parapegma,

Section V.—*On the construction and administration of the Octaëteric Cycle.*

It is now therefore the time to give some account of this ancient and primitive cycle; i. e. of the manner in which it was constructed, and of the mode in which it was administered. It is too simple to require much explanation; and it might have sufficed for our purpose to refer the reader to Geminus' account of it[1], which is easy to be understood, and what is more, (whether Geminus himself was aware of the fact or not,) is in reality the description of the cycle of Solon, and of the first lunar correction of the primitive solar calendar among the Greeks in general.

The Octaëteric cycle then was an artificial system of lunar and solar noctidiurnal and menstrual and annual time; in which the momenta of both, having begun to proceed toge-

attributed to him. On this subject we beg to refer the reader to our former work, Fasti Catholici, iii. 430. *n*. If the first full moon in his scheme fell out critically at or about the winter solstice, the sign of Sagittarius would be likely to engage his attention more than any other: for in that case the first new moon would fall at or about the middle of Sagittarius. It would make no difference too to these suppositions, whether he assumed his winter solstice as the solstice of Mazzaroth, (Dec. 22 in his time,) or the solstice in octavis partibus, qualified by the doctrine of the Recession and Precession, of which we have given an account in former parts of this work[7].

With regard to the other names mentioned by Censorinus, Harpalus, Nauteles, Mnesistratus, of the two latter nothing is known; the first is mentioned again by Censorinus[8], and also by Pliny, among his *auctores externi*, in the 18th book. Festus Avienus alludes to him[9], as Harpalus the ancient, and appears to distinguish him from Meton, as one who was not an Athenian, from one who was. Censorinus seems to have thought him younger than Cleostratus, and Dodwell was of the same opinion[10]. On this principle, he was much too late to have taken part in the construction of the original cycle of Solon. And indeed, if his opinion of the mean length of the natural year was such as Censorinus attributes to him[8], and he actually assumed it as seven hours greater than the mean Julian year itself, it is clear that his opinions and Solon's, on such subjects as these, must have been very different.

1 Cap. vi. Uranolog. 34 D–37 D.

7 Fasti Catholici, iii. 439 sqq.: Origines Kal. Italicæ, iv. 56 *n*. 165 *n*. 8 De Die, xix. 9 Aratea Prognostica, 42 sqq. 10 De Cyclis, Diss. iii. § xxx–xxxiii.

ther, in any conceivable state of relation to each other, from some common point of departure or epoch, at the end of a certain interval of time, proper to this cycle, returned to the same epoch and to the same state of relation again: and in this respect it is evident there was nothing peculiar to this cycle. To bring back the solar and lunar momenta from a certain state of relation to each other, after a certain interval of time, to the same state of relation again, is the professed object of every lunar and solar cycle alike.

As the name of the cycle itself in the Greek implied, it was a cycle of eight years; eight solar and eight lunar years alike: the solar, of the magnitude of the actual Julian year, 365 days every three years of its proper cycle of leap-year, and 366 every fourth: the lunar, of the number of days and nights contained in twelve lunar months of a certain standard, at one time, and in thirteen at another; the former 354, the latter 384. And these lunar years were discriminated nominally from each other, as the common and the intercalary years of the cycle; those of twelve months, the common ones, those of thirteen, the intercalary.

The Period of this cycle was consequently one of eight solar and eight lunar years alike; and the number of days and nights, both in solar noctidiurnal and in lunar noctidiurnal time, which entered it, was the same, 2922. The number of solar months, contained in it, was 12×8 or 96, the number of lunar, $12 \times 8 + 3$ or 99.

The mean length of each of these lunar months was that of the mean lunar month of the standard of this cycle; the actual length was as much less than this in one instance as it was greater in another, or *vice versa*, but so that for every twelve months of each year of the cycle, every two actual lunations were exactly equivalent to two mean lunar months of the Period.

The actual or calendar months of the cycle were consequently alternately *cavi* and *pleni*, or *pleni* and *cavi*; all but the thirteenth or intercalary month, in the proper years of the cycle, which was always *plenus*. The *cavi* were months of 29 days, the *pleni*, of 30; and every two months in succession which were *cavi* and *pleni*, or *pleni* and *cavi* alternately, contained 59 days between them: and in every Period of the cycle the number of *menses pleni* was greater than that of *menses cavi*; i. e. the whole number of both kinds being 99, 46 of them were *pleni* and 43 were *cavi*: but the number of days and nights contained in both together was always the same, and neither more nor less than the number in two cycles of the Julian leap-year, 1461 × 2 or 2922.

The intercalary years of the cycle were the third, the fifth, and the eighth[m] *; and these were not arbitrarily fixed upon, but determined by the reason of things: one principle only being assumed as the rule of the determination; viz. that the Recession of the lunar on the solar year, before the introduction of any supplementary month, should not be more than 30 days nor less than 22: in other words, that the Recession should not be allowed to go on more than three lunar and three solar years in succession, nor less than

* That these were *de facto* the intercalary years of the cycle is plainly asserted by Geminus; though he allows that they might be any other three years. The assertion is borne out by the intercalary rule of every Type of the Hellenic Octaëteric Correction, beginning with that of Solon, of which we shall have to give an account. We hope also to shew that the intercalary rule of the Metonic Cycle in this respect was the same with that of the Octaëteric; and, in fact, in the first instance was derived from it. Nor does it appear that in any form of the Octaëteric Cycle, the seat of the first intercalation was any year but the third, or that of the third any but the eighth; though, with respect to that of the second, there were certainly cycles in which it was the sixth year, not the fifth. But these were generally such as were used for the regulation of the Jewish passover or the Christian Easter, like that described by Epiphanius[1], and characteristic of the rule of the Audiani Alogi. And in these cases the intercalary rule of the cycle was liable to be affected by the Paschal rule, a much more important consideration, and by the limits of the Mensis Novorum.

It is singular to find Solinus[2] describing the intercalary rule of the Greek Octaëteris as if the practice was to allow the annual difference of the lunar and solar year (the lunar epact, 11 days and a quarter,) to lie by and accumulate, from the beginning to the end of the cycle, and then to intercalate 90 days, or three months of 30 days, all at once. The best excuse which can be made for this statement is that it might possibly have been founded on the literal construction of what Geminus also says or appears to say on the same subject, cap. vi. Uranolog. 35 A–B.

m Cf. our Fasti Catholici, Introduction to the Tables, &c. pag. 86.

1 825 C. Audiani, xiii. 2 Polyhistor, i. § 42.

two, before an intercalation should take place†. And in the intercalary years of the cycle, thus determined, the seat of the intercalary month was the end of the year; after the *twelfth* month of that year, and before the *first* of the next.

Such is the explanation in brief of this cycle. The epoch then of the first year of such a cycle being given, it is easy to draw out the scheme of the cycle through the whole of its proper period; and, from the nature of the case, one scheme, thus delineated, for any eight years of this kind, will be of constant application, and serve as the Type or Exemplar of every eight years of the same kind, reckoned

† The difference of one lunar year of 354 days and one solar of 365 days is 11 days; that of two is 22 days; that of three is 33 days. At the end of the third lunar year of the cycle then and the beginning of the fourth, if no intercalary month is introduced into the calendar between the two, the lunar epoch of the fourth year will be 33 days behind the solar; i. e. three days more than one full month, one *mensis plenus* of the calendar. The natural seat of the first intercalation is thus designated as the end of the third year; and the magnitude of the intercalary month is determined by the *justa mensura* of the *mensis plenus* of the cycle: by which means the lunar epoch of the fourth year, instead of being 33 days behind the solar (which by hypothesis is that of the cycle, and always the same with itself) is brought to be only three days in defect of it.

At the end of the next two years, (the fourth and fifth of the cycle,) the sum of the epact, including this difference at the end of the third year, will be 25 days at least, if not 26; and if the next intercalation is deferred until the end of the sixth year, it will be increased to 36 days, six days more than the perfect lunar month. This consideration seems to have determined the first authors of the Octaëteric Cycle to make the seat of the second intercalation, the end of the *fifth* year, not that of the *sixth*; though the consequence of the intercalation, as there and then made, necessarily would be to raise the lunar epoch of the sixth year either five days, or four at least, higher than the solar epoch of the cycle: in the Attic correction of Solon, for instance, four days, from Jan. 19 to Jan. 23 (see the scheme infra).

At the end of the next three years the sum of the recession, if the epact in each is 11 days, will be 33, if in any one of them it is 12, will be 34, *minus* this excess of *five* or *four* days; that is, 28 or 29 days: so that the end of the cycle, the end of the eighth year, is as naturally designated for the third and last intercalation, as the end of the third year for the first. And this being done accordingly, the lunar and solar epoch of the ninth year, the first year of the second cycle, are found to meet and coincide again, as they had done in the first year; and every thing will begin and proceed as before.

either backwards or forwards from the common epoch of all, perpetually.

Hellenic Octaëteris, Type i. ‡

Lunar correction of Solon, or Attic Lunar calendar.

Epoch, Gamelion i, Cycle i. 1, January 19 at midnight, B.C. 592.

B. C.	Cycle.	Midnight.	Julian year.	Lunar year.	Epact.
592	i	Jan. 19	365 days	354	11 days
591	ii	— 8	365 —	354	11 —
591 590	§*iii	Dec. 28	365 —	384	19 —
‖*589	iv	Jan. 16	366 —	354	12 —
588	*v	— 4	365 —	384	19 —
587	vi	— 23	365 —	354	11 —
586	vii	— 12	365 —	354	11 —
*585	*viii	Jan. 1	366 —	384	18 —
584	ii	Jan. 19	365	354	11

Section VI.—*On the error involved in the assumptions of the Octaëteric Cycle, and whether in the time of Solon it must have been knowingly or unknowingly admitted into the calendar.*

It cannot indeed be denied that, assumed as the measure of mean lunar time perpetually, and as a never-failing means of reducing the lunar momenta periodically to an equality to those of the sun, the Octaëteric cycle from the very first involved a serious error, on the side of excess, to which Festus Avienus alludes as follows [n] :

> Nam qui solem hiberna novem putat æthere volvi,
> Ut lunæ spatium redeat, vetus Harpalus, ipsam
> Ocius in sedes momentaque prisca reducit—

implying that the ἀποκατάστασις of the true lunar and true solar momenta thereby effected, was earlier than the actual termination of the eighth lunar year, though not earlier than that of the eighth solar one.

‡ See vol. iii. Appendix, Table i.
‖ Leap-years in the Julian cycle.
§ Intercalary years of the Lunar cycle.

[n] Aratea Prognostica, 41.

The mean lunar standard, assumed in the Octaëteric cycle, is necessarily that which results from the division of the number of mean solar days and nights contained in it, 2922, by the number of lunar months contained in it also, 99[o]: and the quotient so obtained is neither more nor less than

29 d. 12 h. 21 m. 49·090909 sec.

Were this assumption true to nature, (i. e. were the natural mean lunar month, the interval meant by Geminus when he defined the lunar month, by *χρόνος ἀπὸ συνόδου ἐπὶ σύνοδον, ἢ ἀπὸ πανσελήνου ἐπὶ πανσέληνον*[p],) actually neither more nor less than 29 d. 12 h. 22 min. of mean solar time, nothing would be a more perfect and exact nor a more simple measure of mean lunar time and mean solar, in the sense of mean Julian, than the Octaëteric cycle. But forasmuch as the natural standard of the mean lunar month at every period of human existence has never yet been less than 29 d. 12 h. 44 m. at least, it is manifest that to assume it at 29 d. 12 h. 22 m. perpetually must entail a great error of defect, even in one lunar month of such a standard, much more in 99.

The fact is, if we may assume and reason from the mean lunar standard of our own Fasti as the standard of the mean natural one of the same kind[q]; 99 months of that standard and 99 months of the standard of the octaëteris will stand respectively as follows[r]:

		d.	h.	m.	sec.
90 lunations of the Fasti	=	2657	18	3	49·787,234
9 — —	=	265	18	36	22·978,723
99	=	2923	12	40	12·765,957
99 of the octaëteris	=	2922			
Difference	=	1	12	40	12·165,957

It follows that the true lunar epoch of the cycle, however correctly assumed at the beginning of the first year of the first cycle, could not possibly return to the same day at the beginning of the first year of the next, but at the earliest only 1 day 12 hours 40 minutes of mean solar time later: i. e. instead of falling on the first day of the first month of

[o] Cf. on this subject our Fasti Catholici, i. 65 sqq.

[p] Cap. vi. ad princip. Uranolog. 31 B.

[q] Cf. our Fasti Catholici, i. 70: ii. 23. Introduction to the Tables of the Fasti, Part ii. ch. i. sect. vi. p. 88.

[r] Introduction, p. lxxvi. Table xxv.

the first year of the second cycle, as by the assumptions of the cycle it was supposed to do, it would in reality fall on the second. And though this anomaly possibly might elude observation in the first eight years of such a cycle, it could not fail to make itself perceptible in the next eight years, when the discrepancy between true mean lunar time and calendar lunar would amount to three days complete; as great as the interval in any climate of the world, from the last phasis of the moon to the change: and the calendar would already be indicating the new moon on the first of the month, when the heavens would be shewing a moon only 27 days old. This is the error which Avienus intended to specify as characteristic of the octaëteris of Harpalus; yet not more necessarily of that than of any octaëteric cycle constructed on such assumptions: an error of anticipation of calendar lunar time on mean and true, inherent in the first principles of the cycle, and inseparable from its administration in conformity to its own rules and laws at least.

Now an error of such a magnitude as this (amounting to three days in 16 years, to six in 32 years, to nine in 48, and so on) might perhaps have been unknown and unsuspected at first; but it could not possibly remain so after the cycle had been tested by time: and therefore if the cycle itself was not only first imagined and contrived, but actually used and employed, for its professed end and purpose as a constant measure of lunar and solar time, some hundreds of years before the time of Solon, and long after its inherent defectiveness in that respect must have made itself perceptible; it is clear that neither those who had continued to use it down to the time of Solon, nor Solon himself, who adopted it as the proper cycle of his own lunar correction, so late in its history, and with the accumulated experience of so many ages to assist and direct his choice, could have thought this inherent defectiveness any insuperable objection to its use[s]: or though this objection to it *a priori* could neither be denied nor overlooked, that it was not more than counterbalanced by its advantages in other respects. And many probable reasons may be actually assigned which might have influenced the judgment of Solon, and decided him to retain

[s] On this subject, cf. our Fasti Catholici, i. 103, 104.

this cycle (notwithstanding the error to which it was known to be liable) for the regulation of his own lunar calendar.

For ist, As a solar, not less than a lunar, cycle, the octaëteris was perfect of its kind. It was in fact the cycle of the Julian leap-year, and as true to the natural solar year as the Julian itself, perpetually; and for the purpose of fixing the natural year, supposed to be the same with the mean Julian, and especially the cardinal points of that year, according to the directions of the oracle, nothing could be better adapted than this cycle.

ii. The error to which it was liable, however great of its kind, was a stated and regular one. It must go on accumulating from cycle to cycle, but always at the same rate; and an error which was stated and regular, well defined and well understood, and at any time, if necessary, easy to be taken into account, for all practical purposes was the same as none at all.

iii. The error itself was cyclical; it must go on increasing for a time from cycle to cycle, but it must correct itself at last. For if it amounted to one day and a half in one cycle, and to three days in every two cycles, it must amount to 30 days in 20 cycles; that is, one entire lunar month in 160 years. And when that was the case, the new moons of the calendar and the true would begin to coincide again, as they had done at first.

iv. This very tendency of calendar lunar time in this particular cycle to fall back on true, or *vice versa*, that of mean lunar time to advance on calendar, at a certain rate perpetually, was that one of its properties which qualified it for an use and purpose in practice, which no cycle, constantly true to the moon, could have served in the same way; and thereby for obeying the oracular injunction, which prescribed the reckoning of noctidiurnal and menstrual time according to the moon, as well as that of annual according to the sun, in every sense in which it could possibly have been intended: i. e. whether as a reckoning which should always be true to the sun, but only nominally so to the moon, or always be true to the moon, but only nominally so to the sun; or to either of them separately, or to both at once.

For, by virtue of this property of the cycle, it was possible to combine in one and the same calendar a double reckoning of lunar time; a civil or positive one, which should always be the same in the same years and months of the cycle, and always nominally lunar; and a natural one, which should always be true to the moon in every year and every month of the cycle alike. It was possible to have in this cycle, what could not be had in any other more exactly accommodated to the moon, a double stream of lunar time, each running on through the cycle alike, yet not interfering with one another; a conventional one, flowing equably according to the positive law of the cycle, always true to the sun, and nominally so to the moon; and a real or natural one, always true to the moon, but only *per accidens* and at stated times true to the sun. It furnished the means therefore of regulating one class of dates by the civil lunar reckoning, and any other, which it might be desirable to distinguish in that manner, by the true; yet both alike nominally by the moon: and it is very conceivable that, both in order to the fulfilment of the commands of the oracle in every possible construction of their meaning, and for other grave and competent reasons, it might be considered adviseable that while the ordinary business of public and private life, and even the less important ceremonies of religion, should be regulated by lunar time in the sense of calendar, the extraordinary observances of a sacred kind, the principal festivals, the holidays of rarer occurrence and of greater solemnity, should be regulated by the moon. And we have it in our power to prove that in the practical administration of the different feriæ of religion in the octaëteric cycle, this distinction must have been actually made; that while certain stated observances continued always attached to the same calendar dates, and thereby nominally to the same lunar, in every year of the cycle alike, others did not continue attached to their original calendar dates, in every year of the cycle, but did so to their original lunar dates; and therefore must have been cyclical, and followed the moon. And we hope to see hereafter that this was the case with the Panathenaic feriæ in the Attic calendar, so long as it was regulated by the octaëteric cycle, and with the Hyakinthian feriæ, in the Spartan calendar, and with the Olympic feriæ, in the Elean.

For these therefore and similar reasons it is very conceivable that, notwithstanding the known imperfection of the Octaëteric cycle as the true measure of lunar time, it might be deliberately adopted by Solon, and by those who followed Solon in the same career, as the proper cycle of their respective corrections. It is certain at least that many communities among the Greeks, which had once adopted this cycle, and continued to use it to the end of the first of its proper Periods, retained it deliberately for a second Period, and even for a third; though the Metonic Correction in the mean time had been published, and become generally known, and might easily have been substituted for it. It is equally so, that even at Athens, after 160 years' experience of the bad as well as of the good qualities of the old octaëteris, the latter were thought to preponderate over the former so much that the Metonic Correction did not come to be substituted there at last by public authority, until several years after it had been first announced. What was done deliberately and advisedly in so many instances, long after the time of Solon, might have been knowingly and purposely done in the first instance of all by Solon himself.

SECTION VII.—*On the Lunar Standard of the Octaëteric Period, the Lunar Precession, and its chronological use and application.*

The number of lunar months in one cycle of the octaëteris being 99, the number in 20 cycles must have been 99 × 20, or 1980. The sum of mean solar time in 1980 mean lunar months of the standard of our Fasti would be as follows:

Fasti Catholici. Introduction.

Table xxv.

			d.	h.	m.	sec.
1000	Lunar months	=	29,530	14	2	33·1915
900	—	=	26,577	12	38	17·8723
80	—	=	2,362	10	43	24·2553
1980	—	=	58,470	13	24	15·3191
−1	—	=	−29	12	44	2·5532
1979	—	=	58,441	0	40	12·7659

The sum of mean solar time in 40 cycles of the Julian leap-year = 1461 × 40 = 58,440. And this being just 1 d. 0 h. 40 m. 12·7659 sec. less than the sum contained in 1979 mean lunar months of the standard of the Fasti, it is manifest that, after the decursus of 40 cycles of leap-year, in solar or Julian time, 1979 months of lunar time, 160 mean Julian years, 20 Octaëteric cycles, the true lunar time of the cycle and the calendar lunar time would return to the same solar or Julian date, as at the beginning, within *one* day; and that consequently nothing would be necessary at this moment to fit and prepare them for the decursus of another Period of the same magnitude, under the same circumstances of relation to each other as at first, except to raise the solar or Julian epoch of the first Period *one* day—from January 19, for instance, to January 20. The proper Period of this cycle consequently was this of 160 years. In 160 years the inherent tendency of the true mean lunar time of the cycle, to deviate from the calendar, redressed and rectified itself; and nothing was necessary, to keep up the succession of such Periods, according to one and the same law, but to take advantage of the transition of the lunar time of a former period into that of another, for raising the epoch of the succession *one* day. And it is in our power to adduce proof that both the predecessors of Solon, and those who came after him, were well aware of this natural Period of the octaëteris, and of the kind and degree of correction of which it stood in need perpetually; and that it was actually so corrected both before his time and after it.

It is an obvious inference from these explanations, that the true mean lunar standard of the octaëteris after all is not that which we obtained from the division of 2922, the number of days contained in one such cycle, by 99, the number of months contained in it also, but that which would be obtained by dividing 58,441, the number of days in 40 cycles of the Julian leap-year augmented by unity, by 1979, the number of months in 20 Octaëteric cycles diminished by unity also. The quotient of this division is

29 d. 12 h. 44 m. 1·334 sec.

and that is consequently the true mean lunar standard of the cycle. And though it must be admitted that this too is a standard of the mean lunar month which has never yet been competent to represent that of nature; it must some time or other come to agree with it[t]: and even at the beginning of human existence, when the mean standard was the greatest it has ever been in connection with the present system of things, it would have been only three seconds less than the truth; and it was still nearer to the true standard of Solon's time, B. C. 592*.

Another inference from these explanations is, that the tendency of the Octaëteric cycle to accumulate an error on the moon, and the law of the tendency, and the rate of the accumulation from cycle to cycle, being known; it must always have been a very easy matter, by simply allowing for this excess from cycle to cycle, and raising the epochs of the cycle accordingly, to make the octaëteris as perfect a measure of true mean lunar time perpetually as the Metonic cycle itself. And it would seem as if Geminus was aware of calendars in which this was the rule of administration, and the style of the calendar was consequently changed every eight years or every sixteen[u].

A third and by far the most important inference from the preceding account of the Octaëteric cycle is, that this property of the Lunar Precession, or the gradual advance of the true lunar dates of the cycle on the civil or calendar ones, supplies an infallible test of the age of the cycle, or the length of time, in a particular instance, for which it must have been in use. For this purpose, two things only are necessary, a given civil date, taken from the calendar itself for the time being, and the true lunar character of that date, assigned by testimony *ab extra* also, or otherwise discoverable; for example, the calendar date of the battle of Marathon, B. C.

* Fasti Catholici, iv. 670–673:

	d.	h.	m.	sec.
Standard of B. C. 4004	29	12	44	4·475
Standard of Octaëteric Period ..	29	12	44	1·334
Defect				3·141

	d.	h.	m.	sec.
Standard of B.C. 592 from Formula	29	12	44	3·576
Octaëteric standard	29	12	44	1·334
Defect				2·242

[t] Cf. our Fasti Catholici, ii. 23 sqq.

[u] Cap. vi. Uran. 36 A–B.

490, Boëdromion 6, and the lunar character of that date, the full of the moon. From these two data together, we draw the inference, that the Attic calendar of the time being was twelve cycles, or 102 years, old at least; i. e. had been 102 years in use from the proper epoch of the current period, whatsoever that was. And as that is a test of the age of a particular calendar of this kind, of which we shall have frequent occasion to avail ourselves in the course of our future inquiries, we cannot do better than conclude this account of the cycle of Solon with the following Table; embodying the whole of this Precession for one Period of 160 years, and shewing the advance of the true mean lunar reckoning of the Period on the calendar, at the beginning of every cycle of eight years in succession, and the age of the calendar at the time.

Table of the Lunar Precession, or gradual advance of true mean lunar time on calendar, in the Octaëteric Cycle, through 20 *Cycles of eight years, and one Period of* 160 *mean or actual Julian years.*

Cycle.	Lunar Precession.				Date of the New Moons.	Age of the Calendar.
	d.	h.	m.	sec.	Day of the Month.	Years complete.
i	0	0	0	0	1	0
ii	1	12	40	12·76596	2	8
iii	3	1	20	25·53192	4	16
iv	4	14	0	38·29788	5	24
v	6	2	40	51·06384	7	32
vi	7	15	21	3·82980	8	40
vii	9	4	1	16·59576	10	48
viii	10	16	41	29·36172	11	56
ix	12	5	21	42·12768	13	64
x	13	18	1	54·89364	14	72
xi	15	6	42	7·65960	16	80
xii	16	19	22	20·42556	17	88
xiii	18	8	2	33·19152	19	96
xiv	19	20	42	45·95748	20	104
xv	21	9	22	58·72344	22	112
xvi	22	22	3	11·48940	23	120
xvii	24	10	43	24·25536	25	128
xviii	25	23	23	37·02132	26	136
xix	27	12	3	49·78728	28	144
xx	29	0	44	2·55324	29	152
i	30	13	24	15·31920	1	160*

* The proposition which we have endeavoured to establish, viz. that, from the time of Solon downwards, wheresoever the calendar was nominally lunar among the Greeks, but regulated by such a lunar cycle as the

octaëteric, it must have been well understood that a given calendar date, and the true lunar date of the same denomination, were liable to be different, can require no confirmation but the reason of things, and the necessity of the case. It admits however of being illustrated by testimony *ab extra*, probably as ancient as the time of Solon himself; and as this is an interesting fact, and very important to our own purpose, we shall beg leave to dwell a little upon its elucidation.

This testimony is that of an Inscription, discovered at Athens, part of which we must begin with quoting; for which purpose we shall take the text, as corrected and restored by Mr. Boeckh [1].

Ἄρχει(ν δὲ) τὸν χρόνο(ν τ)ῶν σπονδῶν (τοῦ) Μεταγειτνι(ῶ)νος μηνὸς ἀπ(ὸ) ἀρχομενίας, (κ)αὶ τὸν Βοηδρ(ο)μιῶνα, καὶ τοῦ (Πυ)ανοψιῶνο(ς) μέχρι δεκάτ(η)ς ἱσταμένου. (τ)ὰς δὲ σπονδὰς εἶναι ἐν τῆ(σι) πόλεσιν ὅ(ἰ) ἂν χρῶνται (τῷ) ἱερῷ, καὶ Ἀθηναίοισιν ἐκεῖ ἐν τῆ(σιν) αὐτῆσι πόλε(σ)ιν τοῖς ἰδίοις (μ)είζοσι μ(υ)στηρίοισιν. (τ)ὰς (σ)πονδὰς εἶνα(ι ἀ)πὸ Γαμηλιῶνος μηνὸς ἀπὸ ἀ(ρχ)ομενίας, κα(ὶ) τὸν Ἀνθεστη(ρ)ιῶνα, καὶ τοῦ Ἐλαφηβολιῶνο(ς) μέχρι δεκάτ(η)ς ἱσταμένου.

There can be little doubt that this Inscription is older than the Metonic correction and the Peloponnesian war; and it is evident that it related to the Μυστηριουτίδες σπονδαὶ, the ἐκεχειρία, the immunity from war, or violence of any kind, which was considered one of the privileges of the season of the mysteries, as well as of that of the other national solemnities, the Olympian, the Isthmian, and the rest of the games of the Period. The first institution of this ἐκεχειρία is attributed to Iphitus the Elean, and Lycurgus the Spartan, on occasion of the restoration and reconstitution of the Olympic games; and we reserve any further explanations of it for the time when the Olympic Institution will come under our consideration.

Mr. B. indeed, understanding it to refer to some special agreement of this kind, dates it sometime or other before the 30 years' truce; that is, before B. C. 445; when the Athenians and Lacedemonians were at war with each other. But in our opinion, to refer such an inscription to any special and temporary occasion, is to mistake its true nature and drift. The σπονδαὶ μυστηριουτίδες must have been recognised and observed among the Greeks long before the time of the 30 years' truce. No parties to the agreement are mentioned, but the Athenians on one hand, and those communities, which had a right to the use of the temple and oracle of Delphi, on the other; and these two must have included all the Greeks. The thing stipulated for between them, (virtually, if not in so many words,) is the protection of the latter, by the sacredness and inviolability of the season, at Athens, and that of the Athenians, for the same length of time, in those cities. And this protection is covenanted for, at each of the mysteries, and for the same length of time at each; for the greater, in Metageitnion, Boëdromion, and Pyanepsion, seventy days in all, and for the lesser, in Gamelion, Anthesterion, Elaphebolion, seventy days also.

It is clear then that no special or temporary agreement was contem-

[1] Corpus Inscriptionum Græcarum, No. 71. tom. i. 107, 108.

plated on this occasion, but some general and lasting one; and not between the Athenians and any particular community, but between them and all the Greeks besides, who had as much right and interest in the temple of Delphi as themselves. And it began in all probability with an express mention of the parties in favour of whom this immunity even in a time of war, for this particular length of time, was intended; viz. the two classes of candidates for initiation, the *μύσται*, and the *ἐπόπται*, the former at the lesser mysteries, the latter at the greater; *Σπονδὰς εἶν(αι) τοῖσι μύστ(ησ)ιν καὶ τοῖ(ς ἐπό)πτησιν*. And very probably also, it specified the penalty to which the violation of this agreement should be liable, (a pecuniary fine of such and such an amount for an involuntary breach of this agreement, and twice as much for a voluntary one,) as still to be read in the Marble, just before the clause last cited.

But the most remarkable peculiarity about it, and that to which we desire to direct the reader's attention, is the use of the term *ἀρχομενία*, which occurs in it twice; once for the first of Metageitnion, and again, for that of Gamelion. We have searched in vain for another instance of the use of this same term in the same sense. The usual denomination of the first day of the civil month, in the Greek lunar calendar, was *νουμηνία*: and *ἀρχομενία* or *ἀρχομηνία*, it might be said, must mean the first of the month too. But *ἀρχομηνία* is simply the first of the month; *νουμηνία* is properly the first of the moon (*νεομηνία· ἡ πρώτη τῆς σελήνης ἡμέρα*[2]); and *ἀρχομηνία* and *νουμηνία* could not be convertible terms for the same day, unless the first of the month and the first of the moon were convertible also.

From the use then of this very peculiar term, which occurs so prominently in this inscription, and yet is one of the *ἅπαξ λεγόμενα* of the Greek language, we think we are justified in drawing one of *two* inferences respecting the nature of the calendar, when the agreement recorded in this inscription was made—either that it was still solar at that time, and every month had an *ἀρχομηνία*, but none of them as yet a *νουμηνία*, or that it was now lunar, but the first day of the calendar month, and the first day of the lunar, were liable to differ, and it was well understood that the *ἀρχομηνία* or first of the month might be one day, and the *νουμηνία* or first of the moon might be another. If that was the case, it requires no argument to prove that, for the purpose of such a covenant as this, it would be necessary to distinguish between them; that where the object proposed was to define the beginning and ending of an *ἐκεχειρία*, (which would be necessary only in a time of war,) nothing would be more important than to make use of language which could not possibly be mistaken: and if the beginning of the privileged season was to be the first of Metageitnion in one instance, and the first of Gamelion in the other, no precaution could be more obvious, while the calendar was regulated by the octaëteric cycle, than this, of dating that season from the *ἀρχομηνία* of each of these months, not from the *νουμηνία*. The *ἀρχομηνία* of either could never denote any day but the first of the month; the *νουμηνία*, while

[2] Hesychius, in voce.

the octaëteric cycle was still in use, might denote a very different day; as different, in an extreme case, as the first day of the month from the last.

We are entirely of opinion, that the second of these inferences is that which is most justly to be drawn from this Inscription; that it belongs to an æra when the calendar was already lunar, but the cycle by which it was regulated was still the octaëteric; wherein, for the reasons assigned, it was absolutely necessary, in a case like this, to distinguish between the first day of the civil or calendar month, and the first of the lunar. For, i. it belongs to a time when the months were already called by the names which they first received when Solon corrected the calendar. ii. The general character of the Inscription is that of a remote antiquity, in comparison even of those which are confessedly ancient; yet not necessarily of one which could reasonably be supposed to go further back than the time of Solon. The letter E is used in it both for E and H: the letter O for O and Ω: the rough breathing is expressed by H, prefixed to such words as require it; and the dialect in several instances is Ionic, which did not differ from the ancient Attic. iii. The shape of the marble on which it was found resembles that which the ancients ascribe to the Ἄξονες of Solon: and the subject matter of the Inscription itself is such as might have been expected *a priori* on one of these Ἄξονες, as contradistinguished to the Κύρβεις, also attributed to him. According to the accounts of antiquity, the laws of Solon were divided into these two classes, Ἄξονες and Κύρβεις, each of them so called not from the subject matter of the laws themselves, but from the form in which they were published; (that is, the different way in which they were written out, and exposed to view;) though there was also a distinction in the matter or substance of the laws inscribed on each respectively. The Axons contained the laws and constitutions which related to civil affairs; the Kyrbs those which related to sacred, to the temples, the stated services of religion; to every thing in short of a purely religious or ceremonial character, in contradistinction to what was purely civil, or as much civil as religious. Now the compact or covenant recorded in this Inscription is evidently of this latter description. It is a purely civil compact, though in behalf of one of the ceremonies of religion; binding the parties in it (the Athenians on the one side, and the rest of the Greeks on the other) to certain federal obligations, which should last for the term of the mystical season, but no longer. It might therefore very properly have been treated as the subject matter of one of the Axons, but not so properly as that of one of the Kyrbs.

Now the Axons are described as wooden blocks, of the height of a man, and square or rectangular, that is, four sided; each side being covered with writing, and each provided with a peg, or handle, by which the whole block might be moved about on an axle or pivot inside[3], in order that the inscriptions on each side might the more easily be read. And this appears to have been the reason why they were called Axons; viz. from the circumstance of their turning on an axle or pivot. The Kyrbs,

[3] Cf. Festus, i. 46. in Axis.

on the other hand, are commonly represented as three-sided blocks, terminating in a point, like a cone or pyramid: from which circumstance too they derived their name: *ἀπὸ τοῦ κεκορυφῶσθαι*, as it is sometimes explained, or from their resemblance to the crown of a peaked cap, *κυρβασία*, which Aristophanes applies metaphorically to the comb of a cock, and literally to the turban of the kings of Persia[4].

Again, the inscription was found by Chandler[5], in that quarter of ancient Athens to which the Axons and Kyrbs, having been set up originally in the Acropolis, were afterwards transferred, in order to be more accessible; that is, the Agora and the parts adjacent to it. *Ἀπέκειντο δὲ οἵ τε κύρβεις καὶ οἱ ἄξονες*, says Pollux[6], *ἐν Ἀκροπόλει πάλαι· αὖθις δ᾽ ἵνα πᾶσιν ἐξῇ ἐντυγχάνειν εἰς τὸ πρυτανεῖον καὶ τὴν ἀγορὰν μετεκομίσθησαν· διὰ τοῦτο ἔλεγον τὸν κάτωθεν νόμον, ἀντιθέντες πρὸς τὴν Ἀκρόπολιν*[7]: a change in their situation, which, we are told[7], was made by Ephialtes, a contemporary of Pericles; and some remains of the original Axons and Kyrbs thus transferred were still to be seen in the Prytaneum, even in the time of Plutarch and Harpocration[8].

We cannot indeed assume that the Inscription may have been one of these very Axons, preserved to our own times; for it appears from the testimony of Harpocration, that the Axons and Kyrbs were written *βουστροφηδὸν*, i. e. not from left to right, or right to left, but first from one, and then from the other, that is, backwards and forwards: and that is not the case with this Inscription. But there is no reason why it may not have been a copy of an original Axon, made in later times, when the mode of writing had become different.

Indeed the most probable explanation of it, and the most naturally suggested by the allusion to the temple at Delphi, is, that though erected at Athens, it recorded a law passed by the general council of the Amphictyons, of which Solon was an influential member, at or about the time when he legislated for Athens. The Eleusinian mysteries had been in existence, as we hope to see hereafter, 700 years and upwards before the time of Solon; and yet we hope to see also that Solon himself introduced such changes into their proper rule and administration, that they might

4 Aves, 487. Cf. Harpocration, *Κύρβεις*: Suidas, *ὀργεῶνες*: Scholia in Apollon. Rhod. iv. 278: Porphyry, De Abstinentia, ii. 21: and on the *Ἄξονες* and *Κύρβεις* generally, Plutarch, Solon. xxv. xix. xxiv.: Hesychius, *προπτόρθια, τρεῖς θεοί*: Lucian. Opp. ii. 358: Eunuchus, 10. 64: Photii Lexicon, *Σῖτος*: Scholia in Demosth. Contra Aristocratem, 629. 21: Steph. Byz. *Ἁγνοῦς*: Plut. Solon, i.: Harpocration, *Ἄξονι*: Scholia in Aristoph. Nubes, 447: Aves, 1354: Suidas, *Κύρβεις*: (Cf. Anecdota Græca Oxoniensia, i. 221. 5: *Ἐπιμερισμοί*: Etymol. Magn. *Κύρβεις*): *Νόμος*: (Cf. in *Σόλων*: Scholia in Platon. ii. 420: Respublica, x. 475. 4): *Ἄξονες*: Schol. in Platon. ii. 373. Politica, 336. 10: (Cf. Etym. M. *Ἄξονες*: Phot. Lex. *Κύρβεις*: Anecdota Græca (Bekkeri) 204. 274. 413: Eustathius, in Il. Z. 169. 490: Tzetzes, Chilias xii. 349: Histor. 406: Parœmiographi Græci, iv. 77. 329: Cf. 67. e Cod. Bodl. 570. *Κύρβεις κακῶν*: 26. e Cod. Bodl. 253. *Βολίτου δίκην*.

5 Inscriptiones Atticæ, pars ii. pag. xxiv. No. xxvi.

6 Onomasticon, viii. x. 128: Hesych. *Ἄξων*: *Κύρβις*.

7 Cf. Harpocration, and the Anecdota, 269. 14. in *ὁ κάτωθεν νόμος*.

8 Locis citatis.

CHAPTER III.

SECTION I.—*On the Rule of Administration in the Calendar of Solon, and its most characteristic peculiarities.*

We shall probably find an opportunity, as we proceed, of explaining the details of the Calendar of Solon in other respects; but at present we propose to confine ourselves to three or four points, which we consider to have been its principal and most characteristic peculiarities. First, that every month in this calendar had a τριακὰς, or 30th day. Secondly, that every other month had an *Exemtile* day. Thirdly, that the *Exemtile* day was always the 29th. Fourthly, that the months in every civil lunar calendar being alternately *cavi* and *pleni*, 29 days and 30 days long, respectively, or *vice versa;* the *odd* months in the calendar of Solon were always *cavi*, the *even* ones always *pleni.*

i. That every month in the calendar had a 30th day: the civil year of Solon was purposely so contrived that, while it was intrinsically lunar, it was externally and apparently solar; that is, every month in it had nominally thirty days, whether it had so truly or not, and therefore was nominally of the proper length of the equable solar month. In this respect it did not differ from that of Meton, nor, *vice versa*, that of Meton from that of Solon; or rather the rule of the old calendar in this one respect determined that of the new: for Meton, finding all the months in the old calendar nominally τριακονθήμεροι, left them so in his own. Nor can there

almost be said to have come into being in his own time. And though we have no certain proof of the fact, yet we consider it on every account most probable, that the σπονδαὶ μυστηριουτίδες, the institution of a privileged season on behalf of the mysteries, as much as of any of the games of the Period, is to be traced to him. The Amphictyonic council, as representing the rest of the Greeks, would be the proper parties to enter into this covenant with the Athenians, as represented by Solon: and forasmuch as the covenant, actually recorded in the Inscription, was made on behalf of the mysteries, and between the Athenians, on one hand, and those who had the right of the temple on the other, this is a strong ground of presumption that it must have been actually made between Solon on the one side, and the Amphictyons on the other; and would explain the fact, that though made at Delphi, it was recorded at Athens.

be much doubt, in our opinion, that this rule was purposely adopted in the first instance partly that so the transition from the old solar calendar to the new lunar one might be the more imperceptible, and partly in obedience to the directions of the oracle; the *prima facie* construction of which implied that though the months and the days were to be reckoned in reality according to the moon, they were to be reckoned in appearance according to the sun.

As a general illustration of this first peculiarity of the administrative rule of the lunar correction of Solon, thus much might suffice. Particular proofs of the same thing would be the following: i. Every month in his calendar had a *νουμηνία*, and every one had also an *ἕνη καὶ νέα*. Now the *ἕνη καὶ νέα* was only another name for the *τριακὰς* or 30th of the month. Therefore every month had a *τριακὰς* or 30th day. ii. The *κύριαι ἐκκλησίαι* in every month were three in number; and the stated dates of each were the eleventh or tenth, the twentieth, and the thirtieth respectively*. If so, every

* Εἰσὶ δὲ *νόμιμοι ἐκκλησίαι αἱ λεγόμεναι κύριαι τρεῖς τοῦ μηνὸς* Ἀθήνῃσι, *ἡ πρώτη καὶ ἡ δεκάτη καὶ ἡ τριακάς*[1] —Ἄλλοι *δέ φασιν καθ' ἕκαστον μῆνα ἐκκλησίας εἶναι τρεῖς, αἳ κύριαι πρὸς σύγκρισιν ἐλέγοντο τῶν συγκλήτων*[2] —Ὅτι *τρεῖς ἐκκλησίαι τοῦ μηνὸς ἐγίνοντο ὡρισμέναι*[3] —Ἰστέον *γὰρ ὅτι κατὰ μῆνα τρεῖς ἐκκλησίας ἐποιοῦντο . . . καὶ ἐγίνετο ἡ πρώτη ἐνδεκάτῃ τοῦ μηνὸς, ἡ δὲ δευτέρα περὶ τὴν εἰκοστὴν, ἡ δὲ τρίτη περὶ τὴν τριακοστήν*[4] —Περικλεῖ *δὲ καὶ τοῖς ἄλλοις ῥήτορσι τρεῖς ἡμέρας ἑκάστου μηνὸς συνῆσαν* Ἀθηναῖοι *ὡς ἔπος εἰπεῖν δημοσίᾳ*[5]. —Τίνες *δὲ αἱ κύριαι ἐκκλησίαι*, Ἀριστο*τέλης δεδήλωκεν ἐν τῇ* Ἀθηναίων *πολιτείᾳ, λέγων τοὺς πρυτάνεις συνάγειν τὴν βουλὴν καὶ τὸν δῆμον, τὴν μὲν βουλὴν ὁσημέραι, πλὴν ἐάν τις ἀφέσιμος ᾖ, τὸν δὲ δῆμον τετράκις ἑκάστης πρυτανείας, κ', τ. λ.* Harpocration, Κυρία *ἐκκλησία*. Cf. Pollux, viii. ix. 7. 95.

Inscriptions are extant in which mention is made of these *ἐκκλησίαι κύριαι*: Ἐπὶ Κλεομάχου *ἄρχοντος· ἐπὶ τῆς* Ἀντιοχίδος *ἑνδεκάτη(ς πρυτανείας* . . . Θ*(αργ)ηλιῶνος ἑνδε(κ)άτῃ ἑνδεκάτῃ τῆς πρυτανείας ἐκκλ(ησία κυρ)ία*[6]. The best testimony however, to which we could appeal in illustration of the date of the first regular assembly, in the time of Demosthenes at least,

[1] Scholia in Aristoph. ad Acharnenses, 29. Cf. ad Equites, 43: Suidas, Ἐκκλησία *κυρία*.

[2] Photii Lex. *κυρία ἐκκλησία*: cf. Harpocrat. and Phot. and Suid. *σύγκλητος ἐκκλησία*: Appendix ad Photium, *κυρία ἡ ἐκκλησία*: Etym. M. *κυρία* and *σύγκλητος*.

[3] Schol. in Demosth. (Dobson) 138: De Falsa Leg. 253. 13. *σύγκλητος ἐκκλησία*: ibid. 176. Adv. Leptin. 468. 6. *τοῦτον δ' ἐν ταῖς ἐκκλησίαις*.

[4] Ibid. 261. Adv. Timocratem, 278. 12. Ὡς *παρὰ πάντας τοὺς νόμους κ', τ. λ.*

[5] Aristides, xlvi. 323. 12. Ὑπὲρ *τῶν τεττάρων*.

[6] Corpus Ins. No. 111. Cf. also No. 122; and 2270, an *ἐκκλησία κυρία* on the 10th of Gamelion.

month had a thirtieth day, as well as an eleventh or tenth, or a twentieth. iii. The rule of reckoning, in the last ten days of every month (from the δεκάτη φθίνοντος to the δευτέρα φθίνοντος), which our authorities agree in ascribing to Solon, necessarily presupposes in all the months a third decad of days, the first of which was the 21st, and the ninth the 29th, and therefore the tenth the ἔνη καὶ νέα or τριακάς. Every month then which had really a δεκάτη φθίνοντος had really a τριακάς; and as there was none which had not the former, there was none which had not the latter also.

ii. That every other month had an *Exemtile* day; it is not necessary to dwell long on the proof of this proposition, which is almost self-evident. For if the months of the calendar of Solon, after all, were not really solar, (i. e. did not and could not consist of 30 days each,) every other at least must have contained one day less than 30. Two natural mean lunations, of any standard which might have been assumed, could not have comprehended less than 59 days complete: and 59 days could not have been distributed between two calendar months in sequence in any other proportion than that of 29 to one and 30 to the other, or *vice versa*.

is that of the Oratio contra Timocraten; the date prescribed for the ἐπιχειροτονία τῶν νόμων[7], which, it is well known, were subject to an annual revision under the superintendance of the Νομοθέται or Θεσμοθέται, of whose duties, see Pollux[8]. This ἐπιχειροτονία was to take place ἐπὶ τῆς πρώτης πρυτανείας τῇ ἑνδεκάτῃ—which, in the case referred to in this oration, was the 11th of Hecatombæon[10]. It proceeded[11], Ἐὰν δέ τινες τῶν νόμων τῶν κειμένων ἀποχειροτονηθῶσι, τοὺς πρυτάνεις ἐφ' ὧν ἂν ἡ ἐπεχειροτονία γένηται ποιεῖν περὶ τῶν ἀποχειροτονηθέντων τὴν τελευταίαν τῶν τριῶν ἐκκλησιῶν[12]. The number of ἐκκλησίαι in every month (regular ἐκκλησίαι) consequently was three. Whether this was one of the laws of Solon does not appear[13]. It is said however of this, and of the others, just before recited, Οὗτοι πάντες οἱ νόμοι κεῖνται πολὺν ἤδη χρόνον . . . καὶ πεῖραν αὐτῶν πολλάκις δεδώκασιν ὅτι συμφέροντες ὑμῖν εἰσι, καὶ οὐδεὶς πώποτε ἀντεῖπεν μὴ οὐ καλῶς ἔχειν αὐτούς[14]. They would be ancient, relatively to the time of this oration (B. C. 354 or 353), if no older than the Metonic correction, when Hecatombæon became the first month of the year; much more, if as old as the legislation of Cleisthenes, B. C. 510, or that of Solon himself, B. C. 593.

7 xxiv. § 23. 706.
8 viii. ix. 19. Cf. Suidas in Θεσμοθέται.
10 § 26. 23. 29. 30. 46. 47. 82.
11 § 24.
12 Cf. ad 28.
13 Cf. § 27. 117. 120. 128. 162.
14 § 27.

Twelve such lunations in sequence then, either natural or civil, could not have included either more or less than six months of 29 days each, and six of 30, or *vice versa*—354 days in all. In a calendar so constructed, whatsoever number of days each month might have contained nominally, every other must have contained one less than 30. Modern chronologers have been accustomed to call this deficient day in the lunar month of antiquity the ἐξαιρέσιμος ἡμέρα; and the ancients themselves speak of it in the same way: yet ἐξαιρέσιμος properly denotes *exemptilis*, apt to be *taken out*; and no day could with propriety be said to be liable to be *taken out* of the month, which did not properly *enter into* it. There could have been no room then even for the nominal exemption of a particular day from a particular month; if it had not previously made part of it. And after all no day was actually taken out, nor in the nature of things could be: not even the exemtile day. It was merely passed by—*overlooked*, as it were, and *forgotten*—(and so far treated as if it had no actual existence—) when its turn came to be taken into account. And it would have been well if the ancients had given it a name which implied this; viz. that it was merely suppressed and past over at stated times; not that it was actually taken out of the month.

iii. That this exemtile day was always the 29th of the month; enough has been said, even under the two preceding heads, to lead to *this* inference, that in such a lunar calendar as Solon's, the day passed over at stated times could have been only the 29th. This third proposition might be considered a corollary of the first and second. No lunar month, neither the natural nor the civil, could consist of less than 29 days complete. Beginning to reckon from the νουμηνία, you cannot come to the end of the reckoning of either in any sense, until you have got to the 29th day common to each, at least; but, after this, in months, which by hypothesis must have only 29 days, if you are not to pass over the 29th, you must omit the τριακάς; if you must not leave out the τριακὰς, you must pass over the 29th. Now, by the first rule of the administration of the calendar of Solon, the τριακὰς was never to be left out: every month must have a τριακάς. If so, the 29th in these particular instances must be passed over. The τριακὰς must step into the place of the 29th. Months of this description would have their reckoning of days continuous and complete from the first to the 28th; but from this it would pass *per saltum* to the 30th. In such months there was a τρίτη φθίνοντος, a τρίτη ἀπιόντος or ἐξιόντος, or the like; but no δευτέρα φθίνοντος. And that this was actually the rule of reckoning in the calendar of Solon will be shown, both by other proofs hereafter to be produced, and by the testimony of Hesiod, a contemporary of Solon's and of his correction, in particular.

iv. That the odd months in the calendar of Solon were months of 29 days in length, and the even months were months of 30; this one of the characteristic peculiarities of his calendar is the most important of all; and therefore it is desirable that we should establish it, if possible, with the greatest degree of certainty. The rule of alternation indeed which must be adopted in every lunar calendar, *a priori*, might be considered indifferent; and therefore, in a particular instance, *de facto*, conventional and positive: provided only no two months in sequence contained more than 59 days, except when and where the administrative rule of the calendar in another respect (the intercalary rule) required the contrary. That being the case, which of the two should have 30 and which 29, at first sight seems to be indifferent. And yet the common sense of mankind does appear to have decided this question in *one* way; viz. That the most natural and obvious course of proceeding was to give the first of these two months 29 days, and the second 30. This was *de facto* the rule of the *sacred* calendar, or lunar calendar of the Jews from the Exodus downwards, as we have shown in our Prolegomena ad Harmoniam Evangelicam[v], and as the chronology of the Old Testament serves to establish by a variety of corroborative proofs. It was the rule of the calendar of Numa[x], 120 years older than that of Solon; and of all the lunar corrections of the Greeks, later than this of Solon's, and made in imitation of it, with one exception only, which will be pointed out and accounted for, as we hope,

[v] Cap. i. pag. 14, 15, 49, 50.
[x] Cf. our Origines Kal. Italicæ, i. 214.

hereafter. All the rest adopted the same rule for the alternation of the months, as that of Solon; either from deference to the precedent thus introduced by him, or from the reason of things, and the same sense of fitness and propriety which had induced Solon himself to fix upon it.

We do not expect the reader to receive these assertions simply on our own authority. Particular proofs of them will be produced by and by; but first of all, something may very properly be said of the reason of things, and of the common sense of propriety, as conspiring to suggest such an arrangement of the details of the lunar calendar as this. If then we reflect that every natural mean lunation must consist of a certain number of days complete, and a fractional part of one more, we shall see that to attempt to frame a calendar month which shall represent the natural one, and yet consist of integral cycles of day and night, reckoned from any epoch of such a cycle, perpetually, is to attempt an impossibility; and that the utmost which can be done is so to assume the length of the civil or calendar lunar month, that any two months of this standard in sequence shall contain between them the same number of integral days and nights, as two natural mean months also would do: in which case, one of these two months must have 12 hours more, and the other 12 hours less, than the corresponding natural month. Minime videntur errasse, observes Censorinus[y], qui ad lunæ cursum menses civiles adcommodarunt, ut in Græcia plerique; apud quos alterni menses ad tricenos dies sunt facti—— Alternis autem mensibus, says Pliny, speaking of the moon[z], xxx implebit numeros, alternis vero detrahet singulos. And hence the distinction of *menses pleni* and *menses cavi*, or by whatsoever name the opposition of a month of 30 days to one of 29, in any form of the lunar calendar, may have been expressed. *Μήν ἐστι χρόνος ἀπὸ συνόδου ἐπὶ σύνοδον, ἢ ἀπὸ πανσελήνου ἐπὶ πανσέληνον. ἔστι δὲ σύνοδος μὲν ὅταν ἐν τῇ αὐτῇ μοίρᾳ γένηται ὁ ἥλιος καὶ ἡ σελήνη· τουτέστι περὶ τὴν τριακάδα τῆς σελήνης. πανσέληνος δὲ λέγεται ὅταν ἡ σελήνη κατὰ διάμετρον γένηται τῷ ἡλίῳ· τοῦτο δέ ἐστι περὶ τὴν διχομηνίαν. ἔστι δὲ μηνι-*

y De Die, xxii. z H. N. xviii. 75.

αῖος χρόνος ἡμερῶν κθ′ $\frac{\alpha}{\beta}\ \frac{\alpha}{\lambda\gamma}$ * . . . . *οἱ δὲ πρὸς τὴν πολιτικὴν ἀγωγὴν ὁλοσχερέστερον λαμβανόμενοι μηνιαῖοι χρόνοι εἰσὶν ἡμερῶν κθ′* $\frac{\alpha}{\beta}$, *ὥστε τὸν δίμηνον χρόνον γενέσθαι ἡμερῶν νθ′. ὅθεν διὰ ταύτην τὴν αἰτίαν οἱ κατὰ πόλιν μῆνες ἐναλλὰξ ἄγονται πλήρεις καὶ κοῖλοι, διὰ τὸ τὴν σελήνην δίμηνον ἡμερῶν εἶναι νθ′* [a]——*Ὅτι δ᾽ ὁ μηνιαῖος χρόνος οὐ τελέως τριάκοντά ἐστιν ἡμερῶν, ἀλλ᾽ ἥμισύ που καὶ τούτῳ προσδεῖ μιᾶς ἡμέρας, Ἱππάρχῳ μὲν ἀποδέδεικται δι᾽ ἑνὸς ὅλου βιβλίου, γινώσκεται δὲ ἤδη καὶ τοῖς ἰδιώταις σχεδὸν ἅπασιν ὡς τῶν μηνῶν ὁ μὲν ἕτερος, ὁ κυλλὸς ὑπ᾽ αὐτῶν ὀνομαζόμενος, ἐννέα καὶ κ′ ἡμερῶν ἐστιν, ὁ δ᾽ ἕτερος ὁ πλήρης τριάκοντα· χρὴ γὰρ ἀμφοτέρων ἐννέα καὶ πεντήκοντα γίνεσθαι τὰς πάσας, εἴπερ ὅλως ἐστὶν ἑκάτερος ἡμίσους ἀποδέων τριάκοντα* [b]——*Τοῖς δὲ κατὰ Παλαιστίνην ἀριθμοῦσιν οἱ δώδεκα μῆνες ἀριθμὸς ἡμερῶν γίνονται τνδ′. ἐπειδὴ γὰρ ὁ ἀπὸ συνόδου τῆς πρὸς ἥλιον αὐτῆς χρόνος ἄχρι πάσης ἄλλης συνόδου, πρὸς τὰς θ′ καὶ εἴκοσιν ἡμέρας ἐτὶ καὶ ἄλλο μέρος ἥμισυ προσλαμβάνει· διὰ τοῦτο τοὺς δύο μῆνας ἡμερῶν γινομένους θ′ καὶ ν′ τέμνουσιν εἰς ἄνισα μέρη, τὸν μὲν ἕτερον αὐτῶν λ′ ἡμερῶν ἐργαζόμενοι τὸν δ᾽ ἕτερον θ′ καὶ κ′. ἀναγκάζονται τοιγαροῦν οἱ οὕτως ἄγοντες τοὺς μῆνας ἐμβόλιμόν τινα ποιεῖν, ὅταν πρῶτον ἀθροισθῇ τὸ τῶν ἔμπροσθεν ἐνιαυτῶν ἔλλειμμα, καὶ γίνηται χρόνος ἑνὸς μηνός· καὶ γέγραπταί γε τῶν ἀστρονόμων καὶ ἄλλοις τισὶ καὶ Ἱππάρχῳ, ὁπηνίκα χρὴ τοὺς ἐμβολίμους μῆνας ἐμβάλλεσθαι* [c].

In such cases then the question could be only which of these months should contain 12 hours more than the proper complement of the natural month, and which 12 hours less. The inference of common sense would seem to have been that the natural and the calendar month, having been set together at first as accurately as possible, should be allowed

* This means, if the text of Geminus is sound, 29 days 12 hours and $\frac{8}{11}$ hours, which however is only 43 m. 38·2 sec. The mean lunar standard thus defined is only an approximate one. Geminus' real standard of that kind was the same with that of Hipparchus, and is stated lower down in the same chapter, 29 d. 12 h. 44 m. 3 sec. 20 ths., or 29 d. 12 h. 44 m. 3·333 sec. Cf. our Fasti Catholici, i. 70 *n.*

[a] Geminus, cap. vi. Uranolog. 31 B–E.

[b] Galen, Opp. ix. 907. Περὶ κρισίμων ἡμερῶν, iii. 4.

[c] Opp. xvii. P. i. 23. 2. In Epidemid. i. Cf. Suidas, Ἐνιαυτός.

to go on together as far as they could in conjunction; and that would be to the end of the 29th day common to both—but that, at this point, after which the natural could no longer go on with the civil in integral days as before, the reckoning of one and the same month in terms of both should be broken off. It seems to have been thought inconsistent to make the first 12 hours of the next mean natural moon, the last 12 of the preceding calendar moon; but not so to make the last 12 hours of the preceding natural moon the first 12 of the next calendar month, if the first 12 of the next natural month entered into it also. The name of *ἕνη καὶ νέα,* given by Solon to the *τριακὰς*, or last day, of his lunar month, must have been first and properly intended of this last half-day of the preceding natural month, and this first half-day of the next to it [d]; and in strictness the proper sense of this term, as applicable to a certain day of the civil lunar month, would be as much that of the *νουμηνία* as of the *τριακάς*. And it is observable, as we hope to see hereafter, that in the idiom of Hesiod, the *ἕνη* without the *νέα* is actually so applied to the first of the month [e].

Particular proofs however of the distinction for which we are contending are not wanting:

i. It appears from Diodorus Siculus[f] that the cardinal date of the system of Meton, determined by him preparatory to his correction, B. C. 432, was the 13th of Skirrhophorion in the calendar for the time being: and this cardinal date having been that of the summer solstice, the Julian date of this solstice is known from the testimony of Ptolemy[g], June 27. The 13th of Skirrhophorion then, B. C. 432, fell on June 27, and therefore the 1st on June 15. If so, Skirrhophorion must have been a *mensis plenus*, and Thargelion, the month before it, a *mensis cavus*. For the epoch of the Attic calendar that year, Gamelion i, Cycle i. 1, was Jan. 19; from which, Gamelion being reckoned at 29 days, and every odd month after it at the same, we get the first of Thargelion May 17, and the first of Skirrhophorion June 15; but Gamelion being reckoned at 30 days, and every odd month at the

[d] Cf. the Schol. on the Odyssey Ξ. 162, and Hesychius, τοῦ μὲν φθίνοντος μηνος τοῦ δ' ἱσταμένοιο.

[e] Opera et Dies, 768.

[f] xii. 36.

[g] Cf. our Fasti Cathol. i. 155. 158: ii. 409.

same, we get Thargelion 1 indeed May 17, as before, but Skirrhophorion 1 June 16; and therefore Skirrhophorion 13 June 28: a day too late for the solstice of Meton, June 27.

ii. It is to be observed that while the rule relating to the exemtile day in the calendar of Solon was invariable in every other instance, and such as we have represented it, a particular exception to it was allowed in one instance, which from the nature of the case must have held good from the first: viz. that in the month Boëdromion, instead of being the 29th, it should be the second perpetually. The reason traditionally assigned for this exception was that the second of Boëdromion was the day of the contest between Posidon and Athena, which should be the tutelary genius of Attica[h]. Some of the learned in modern times have raised doubts of the fact of this exception; but it is so plainly asserted by Plutarch, as notorious to himself and to all his contemporaries, that any scepticism about it at present must be considered unreasonable. Ἀθηναῖοι δὲ, says he[i], *τὸν περὶ τῆς ἔριδος τῶν θεῶν μῦθον ἀτόπως πλάσαντες ἐπανόρθωμα τῆς ἀτοπίας οὐ φαῦλον ἐνέμιξαν αὐτῷ· τὴν γὰρ δευτέραν ἐξαιροῦσιν ἀεὶ τοῦ Βοηδρομιῶνος, ὡς ἐν ἐκείνῃ τῷ Ποσειδῶνι πρὸς τὴν Ἀθηνᾶν γενομένης τῆς διαφορᾶς*·—Again: *Καὶ ὁ Ὕλας ὥσπερ ἡδίων γενόμενος, Ἐκεῖνο δέ σε εἶπεν, ὦ Μενέφυλλε, λέληθεν ὅτι καὶ τὴν δευτέραν τοῦ Βοηδομιῶνος ἡμέραν ἐξαιροῦμεν, οὐ πρὸς τὴν σελήνην, ἀλλ' ὅτι ταύτῃ δοκοῦσιν ἐρίσαι περὶ τῆς χώρας οἱ θεοί. παντὶ εἶπεν ὁ Λαμπρίας (δῆλον) ὅσῳ τοῦ Θρασυβούλου γέγονε Ποσειδῶν πολιτικώτερος, εἰ μὴ κρατῶν ὡς ἐκεῖνος ἀλλ' ἡττώμενος * * * ὅρκοις δ' ἄνδρας ἐξαπατητέον*[k]. The text in the conclusion of this last passage is defective; but it is easy to see that it was proceeding to draw a comparison between the conduct of Posidon in consenting to this compromise, after he had lost his cause, and the celebrated *ἀμνηστία* of Thrasybulus, which he had

[h] Augustin, De Civitate Dei, xviii. 9. Cf. Schol. ad Iliad, P. 54. Schol. on Pindar. Olymp. ix. 68. V.

[i] De Fraterno Amore, xviii.

[k] Symposiaca, ix. 6. Cf. Lydus, De Mensibus, ii. 6. 17, 13., who refers to this testimony of Plutarch.

That some *one* day in the Attic calendar was wont to be exemtile *extra ordinem*, might have been suspected from what Philostratus relates of the Athenians in the time of Herodes Atticus. Herodes having lost his daughter Panathenaïs, the Athenians, to console him, decreed that the day of her death should be exemtile: Vitæ Soph. ii. 556 C. Herodes: Τὸ δὲ ἐπὶ Παναθηναΐδι τῇ θυγατρὶ (πένθος) Ἀθηναῖοι ἐπράϋναν, ἐν ἄστει τε αὐτὴν θάψαντες, καὶ ψηφισάμενοι τὴν ἡμέραν ἐφ' ἧς ἀπέθανεν ἐξαίρειν τοῦ ἔτους.

offered only as a conqueror on the 12th of the same month.

We may have occasion hereafter to consider the date of this fabulous contest, and to explain how it happened that the second of Boëdromion was fixed upon for it. At present we assume only that this date was as old as the time of Solon; and consequently the rule, which made it perpetually exemtile in his correction. If so, Boëdromion in the lunar correction of Solon must have been from the first an hollow month: and Boëdromion being an hollow month, the ninth month in the lunar calendar of Solon was an hollow month; and if the ninth, the seventh, and the eleventh, and every other uneven month besides. This reasoning, it is to be observed, holds good of the calendar of Meton as well as of that of Solon; and whether the beginning of the civil year at Athens is dated with Hecatombæon or with Gamelion. The first hollow month in the calendar of Meton also was the third, and that third in his calendar was Boëdromion; the exemtile day in that month being by rule the 3rd, by the exception the 2nd. We may add that a particular date is extant in terms of this month, the date of the battle of Marathon; which is also known to have been the full of the moon, but could not have been so, if the second of Boëdromion the same year, though nominally part of the month, had not been really passed over in it.

SECTION II. — *Confirmation of the Fourth administrative rule of the Calendar of Solon by that of the Calendar of Lampsacus.*

We shall conclude our proofs of this Fourth Rule at present, with an illustration of it derived from the calendar of Lampsacus; the effect of which, we think, will be to place it beyond a question, That, by the rule of the old octaëteric cycle, as first adopted in the correction of Solon, and afterwards in those which resembled his, the months were reckoned alternately *cavi* and *pleni*, not *pleni* and *cavi*: i. e. the first month had an exemtile day, and every other month after the first in its turn.

The author of the Œconomica, ascribed to Aristotle, whether Aristotle (which has been doubted) or not, relates a story of the mode in which Memnon of Rhodes, when he was master of Lampsacus, and holding it in garrison, and consequently making use of the calendar of Lampsacus, contrived to defraud his soldiers of a whole month's pay in the course of one year[1]: Μέμνων Ῥόδιος κυριεύσας Λαμψάκου δεηθεὶς χρημάτων . . . τῶν (τε) στρατευομένων παρ' αὐτῷ παρῃρεῖτο τὰς σιταρχίας καὶ τοὺς μισθοὺς ἓξ ἡμερῶν τὸν ἐνιαυτόν, φάσκων ταύταις ταῖς ἡμέραις οὔτε φυλακὴν αὐτοὺς οὐδεμίαν οὔτε πορείαν οὔτε δαπάνην ποιεῖσθαι· τὰς ἐξαιρεσίμους λέγων. Here we may stop, for a moment, to observe, that on this supposition, as the calendar, followed by Memnon in this instance, contained *six*, but only *six*, exemtile days in the course of the year, its proper cycle must have been the octaëteric. It could not have been the Metonic, in which there were sometimes only *five* exemtile days, sometimes *seven*, in the course of twelve months, as well as generally *six*; in which too there might be only *one* exemtile day in the course of *three* months. The story continues: Τόν τε πρὸ τοῦ χρόνον διδοὺς τοῖς στρατιώταις τῇ δευτέρᾳ τῆς νουμηνίας (the day after the new moon) τὴν σιταρχίαν, τῷ μὲν πρώτῳ μηνὶ παρέβη τρεῖς ἡμέρας, τῷ δ' ἐχομένῳ πέντε. τοῦτον δὲ τὸν τρόπον προῆγεν ἕως εἰς τὴν τριακάδα ἦλθεν.

In order to explain this statement, and to comprehend the contrivance by which he effected his purpose, we must first of all observe that the usual pay-day for soldiers at this time appears to have been properly the first of the month; and that, by the rule of the service in general, the pay of the soldiers was made in advance, as may be collected from another story, related in the same work, of one of these ingenious generals of antiquity, who displayed their talents for command by superior cunning and address in cheating their men, Cleomenes, governor of Egypt under Alexander, B. C. 331–323: Κλεομένης, προσπορευομένης τε τῆς νουμηνίας καὶ δέον τοῖς στρατιώταις σιταρχίαν δοῦναι, κατέπλευσεν (corr. ἀπέπλευσεν) ἐξεπίτηδες· προσπορευομένου δὲ τοῦ μηνὸς ἀναπλεύσας διέδωκε τὴν σιταρχίαν. εἶτα τοῦ εἰσιόντος μηνὸς διέλιπεν ἕως τῆς νουμηνίας. οἱ μὲν οὖν στρατιῶται διὰ τὸ νεωστὶ εἰληφέναι τὴν σιταρχίαν ἡσυ-

[1] Opp. ii. 1351. 1–18 *b*. Œconomica, ii. Cf. of Lampsacus, at a time not much later, Pausanias, vi. xviii. 2.

χίαν εἶχον. ἐκεῖνος δὲ παραλλάξας ἕνα μῆνα παρὰ τὸν ἐνιαυτὸν ἀφῄρει μισθὸν ἀεὶ μηνός [m].

We must however suppose that Memnon's rule had been to pay his soldiers not on the *first*, but on the *second*. of the month, and so to date his months not from the *first* exclusively, but from the *second* exclusively; in other words, that having to pay his soldiers a month in advance, and having purposely deferred the payment for the *first two* days of the month, he paid them only from the third to the end, 27 days instead of 30. But now, by taking also into account the exemtile days or no-days of the months, he struck out of the first month *three* days at once, allowing for 27 days only, instead of 30; which implies that the first month had an exemtile day, and was *cavus*: and then, reckoning his *νουμηνία* of the next month as this first day for which he had allowed pay in the preceding month, i. e. the fourth, and the next to that as the *δευτέρα τῆς νουμηνίας* (for neither of which, in the same month at least, had he before allowed pay), he struck off two more days from this sum of 27 in the next month, so as to allow for 25 only, instead of 27. And so on, for every month in its turn; diminishing the remainder sometimes by three days, sometimes by two, according as the month was *cavus* or *plenus*: until by these means the number of days for which he would have to issue pay in the 12th month was reduced to nothing: as the following scheme will show.

i Month.	Cavus	30 − 3	Pay allowed on 27 days.
ii —	Plenus	27 − 2	— — 25 —
iii —	Cavus	25 − 3	— — 22 —
iv —	Plenus	22 − 2	— — 20 —
v —	Cavus	20 − 3	— — 17 —
vi —	Plenus	17 − 2	— — 15 —

[m] Opp. ii. 1353. 1–7 *b*. Œconomica, ii. This is not very clearly exprest, but the sense of the passage in general appears from the last observation—that having missed or skipped over one month, he contrived thereby to keep back one month's pay in the year. His plan therefore must have been, to allow himself purposely to get into arrears for some one month, from the first day until near the end, by keeping out of the way; and then paying off those arrears unexpectedly before the end of that month; and having done that, purposely to defer the next payment till the new moon of the next month but one. By these means having skipped over this one month, without any payment on the *νουμηνία*, and paying his soldiers only their arrears on the *νουμηνία* of the next—he contrived to keep a month's pay in his own hands perpetually.

vii Month.	Cavus	15 − 3	Pay allowed on 12 days.
viii —	Plenus	12 − 2	— — 10 —
ix —	Cavus	10 − 3	— — 7 —
x —	Plenus	7 − 2	— — 5 —
xi —	Cavus	5 − 3	— — 2 —
xii —	Plenus	2 − 2	— — 0 —

This example then serves to prove demonstratively that in the time of this Memnon (a contemporary of Philip of Macedon, and Alexander his son) the calendar of Lampsacus was octaëteric, as that of Solon had been at first; that its months were alternately *cavi* and *pleni*, the *odd* months *cavi*, the *even* ones *pleni*. The Ionic correction in general, as we hope to shew hereafter, was both contemporaneous with that of Solon, and similar to it; and though Lampsacus was not an Ionic settlement, its calendar, as we shall possibly see, was modelled upon the Attic of Solon. We are justified therefore in arguing from the rule of this calendar, as still regulated by the octaëteric cycle, even at this comparatively late period, the original rule in the same respect of the old octaëteris of Solon, on which that of this calendar of Lampsacus was founded *.

* Mr. Ideler, in his chapter on the Greek calendar, observes, that this question, relating to the particular day of the month which was exemtile in the *μῆνες κοῖλοι* of the Attic calendar, is one of the most controverted among chronologers. Dodwell had collected from the Commentary of Ulpian on Demosthenes, and (if we are right in our conclusion) rightly collected, that it must have been the *δευτέρα φθίνοντος*. Mr. Ideler contends, that neither this testimony of Ulpian's, nor that of Proclus upon Hesiod, is competent to decide the question: and he seems to be of opinion, that a particular statement, found in Pollux, is sufficient to overthrow both. We cannot agree with him in this opinion: and we will briefly consider this testimony of Pollux's, to which he attaches so much importance.

Pollux is speaking of the court of the Areopagus, and of the days of the month on which it held its sittings[1]: *Καθ' ἕκαστον δὲ μῆνα τριῶν ἡμερῶν ἐδίκαζον ἐφεξῆς, τετάρτῃ φθίνοντος, τρίτῃ, δευτέρᾳ.* There is nothing in this statement to militate against the conclusion of Dodwell, that the exemtile day, in such months as required it, was the *δευτέρα φθίνοντος*. The statement is a general one; and generally applicable to the rule of session of the court, in every month alike: literally so, in every full

[1] viii. x. 1. § 117. p. 940. Cf. Schol. in Æschin. Contra Timarchum ad pag. 76. 7. *Dobson*. (*Reiske*, 178. ult.)

month; generally so, even in every hollow one. It should be remembered that nominally every month was a full one, and that in general allusions of this kind the exemtile day was not taken into account. If there is any difficulty in understanding this statement of the rule of exemption in the old calendar, (the octaëteric,) there is just the same in understanding it literally of that of the Metonic. Suppose it impossible for the court to have sate literally three days, *ἐφεξῆς*, from the 27th to the 29th of the month, under the old calendar, when there was no 29th of the month—Was it not just as impossible to sit from the 27th to the 29th continually under the new, when there was no 27th of the month? The 29th of the month was the regular exemtile day in the old calendar; the 27th was one of the exemtile days in the new. Each of them must have interfered at stated times with the proper rule of the Areopagitic sittings; but neither of them more than the other.

The statement of Pollux must be understood with that qualification which the reason of things and the nature of the case prescribes; viz. that in such months as admitted of their doing so, the court sate these three days, *ἐφεξῆς*; on such as did not, either they sate two days only *ἐφεξῆς*, or instead of the 29th in the old calendar they sate on the 30th, and instead of the 27th in the new, they sate on the 26th, or prolonged their sittings to the 30th.

The adoption of the Metonic correction, and of the new rule of the exemtile day peculiar to it, must have produced a considerable change in the dates of many observances, before attached to certain days of the month, which in the old calendar never could be exemtile, in the new at stated times, would be so. The 6th of Thargelion, for example, in the calendar of Solon, was the birthday of Artemis, the feastday of Demeter Chloë, and the anniversary of the lustration of Athens. In the calendar of Meton the 6th of Thargelion was liable to be exemtile. What was to be done, in that case, with the observances attached to it? Were they to be passed over for the time, or transferred to some other day? No ancient testimony supplies an answer to this question; and we can return one only conjecturally. It is easy however to see from such a case as this, that no general statement, (like this of Pollux's respecting the sittings of the court of Areopagus,) is to be strictly construed, neither under the new calendar, nor under the old.

There is another passage of this author, from which Petavius[2] and others have inferred that the exemtile day was the 22d of the month. He is giving an account of the parts or divisions of the month[3]: *Μέρη δὲ μηνὸς, ἱσταμένου μεσοῦντος καὶ λήγοντος, ὡς καὶ τὰς τρεῖς δεκάδας οὕτω πως διαιρεῖν. καὶ ἡ μὲν πρώτη ἡμέρα νουμηνία. ἀπὸ δὲ τῆς β′ ἄχρι τῆς α′ δεκάδος τὸ ἱσταμένου προσθετέον. μετὰ δὲ τὴν ι′ Ἡσίοδος μὲν ε′ τὴν μέσην φησὶ, τὴν ε′ τε καὶ ι′ λέγων· ἡμῖν δὲ ῥητέον α′ ἐπὶ ι′, β′ ἐπὶ ι′, καὶ μέχρι τῆς εἰκοσάδος. τὸ δὲ ἀπὸ τούτου α′ ἐπὶ εἰκάδι, ἡ δ᾽ αὐτὴ καὶ θ′ φθίνοντος· θ′ γὰρ λοιπὰ ἀπὸ*

[2] Variæ, i. xiii. Uranolog. 182. Cf. De Doctrina Temp. i. cap. v.
[3] i. vii. § 5 = 63. p. 41.

τῆς κα΄. καὶ ὁμοίως ἄχρι τῆς τριακάδος, ἣν οἱ Ἀττικοὶ καλοῦσιν ἕνην καὶ νέαν, Ὁμήρου εἰπόντος·

Τοῦ μὲν φθίνοντος μηνὸς τοῦδ᾽ ἱσταμένοιο.

διελόντι δὲ εἰς τρία τὸν μῆνα, τὸ τρίτον ἂν αὐτοῦ καλοῖτο δεχήμερον.

From these statements Petavius argued there was no 21st of the month in the hollow months; that there was no *δεκάτη φθίνοντος* in such months, only an *ἐνάτη φθίνοντος*. He admits however that the text of Pollux is corrupt: and what certain inference can be drawn from a corrupt text? It is clear that Pollux is not speaking here of the hollow month exclusively, as if there was no full month also in the Attic calendar. It is clear too even from his statements as they stand at present, that in the month which he *was* describing the reckoning went on without interruption as far as the 21st; and that must be fatal to the hypothesis that he was describing a month in which there was no 21st. As to the rest, three Codices, of good authority, read the sequel very differently: Τὸ δὲ *ἀπὸ τούτου α΄ ἐπὶ εἰκάδι· ἡ δ᾽ αὐτὴ καὶ δεκάτη φθίνοντος. καὶ δευτέρα ἐπὶ εἰκάδι, ἡ δὲ αὐτὴ καὶ ἐννάτη φθίνοντος· θ΄ γὰρ λοιπὰ ἀπὸ τῆς κβ΄.* Yet even this reading, in our opinion, does not restore the text to its probable original purity; because it would not be true to say, nine days remained after the 22d, without including the 22d itself. It would have been true however to have said that nine days remained after the 21st; and had the text always stood, Τὸ δὲ *ἀπὸ τούτου α΄ ἐπὶ εἰκάδι, ἡ δ᾽ αὐτὴ καὶ δεκάτη φθίνοντος· θ΄ γὰρ λοιπὰ ἀπὸ τῆς κα΄*, every thing would have been consistent. Though therefore the present reading is recognised by Gaza[4], we are not justified in drawing any inference from it. Possibly too, (what the learned have never yet suspected,) the month which Pollux was here describing under its proper style, was the solar in the sense of the Julian—not the old lunar. For that the Attic calendar had become Julian before his time, we hope to shew hereafter: though we cannot enter on the further explanation of that point at present.

With regard indeed to the second of the proofs on which we have insisted, the exemption of the second of Boëdromion instead of the regular day—supposing the same exemption to have been perpetuated in the Metonic correction also—the learned editor of the Corpus Inscriptionum Græcarum, Mr. Boeckh, from the testimony of an Attic Inscription, later than that correction, but of undoubted antiquity, infers that the second of Boëdromion in a particular year, when that month was hollow in the cycle of the Metonic correction, nevertheless was not exemtile. It is necessary therefore that we should briefly consider this testimony[5].

Ἐπὶ τῆς Ἐρεχθηΐδος δευτέρας πρυτανείας . . . τρίτη καὶ δεκάτη τῆς πρυτανείας, δεκάτη φθίνοντος Μεταγειτνιῶνος, ἐς τὴν διωβελίαν κ̓, τ. λ. The reckoning then begins on the 13th day of this second Prytany, and the *δεκάτη φθίνοντος* or 21st of Metageitnion, the second Attic month at this

4 De Mensibus, xviii. Uranolog. 307 A. Cf. i. 278 B.

5 Inscriptiones Græcæ, 148. i. 223–228. § 1. v. 1–3.

time. After this we have the following days of the same Prytanea, and the corresponding days of the month on which they fell.

	Μεταγειτνιῶνος.	
Ἑβδόμη καὶ δεκάτη τῆς πρυτανείας[6].	ἕκτη φθίνοντος.	The 25th.
The same[7].	The same.	— —
ὀγδόῃ καὶ δεκάτῃ[8].	πέμπτῃ φθίνοντος.	— 26th.
ἐνάτῃ καὶ δεκάτῃ[9].	τετράδι φθίνοντος.	— 27th.
δευτέρᾳ καὶ εἰκοστῇ[10].	ἕνῃ καὶ νέᾳ.	— 30th.
	Βοηδρομιῶνος.	
τρίτῃ καὶ εἰκοστῇ[11].	νουμηνίᾳ.	— 1st.
τετάρτῃ καὶ εἰκοστῇ[12].	δευτέρᾳ.	— 2nd.
ἕκτῃ καὶ εἰκοστῇ[13].	τετράδι ἱσταμένου.	— 4th.
τριακοστῇ[14].	ὀγδόῃ ἱσταμένου.	— 8th.
The same[15].	The same.	— 8th.
ἕκτῃ καὶ τριακοστῇ[16].	τετράδι ἐπὶ δέκα.	— 14th.

Here the enumeration stops. It is clear however from this comparison of dates, that there was a second of Boëdromion this year, the 24th of the second Prytany: so that, if that month was hollow this year, the exemtile day could not have been the second.

Mr. Boeckh rightly collected from this inscription that the year to which it belonged must have been intercalary; the first Prytanea having had 38 days, ending on the 8th of Metageitnion. He infers from it also, (and apparently not without reason,) that this month, the second in the calendar of the time, must have been *plenus* from the 9th to the 21st, and from the 21st to the 30th; because the second Prytanea beginning to be dated on the 9th of this month, its 13th day is dated on the 21st of the month, its 22d on the 30th. Two months however, Hecatombæon and Metageitnion, in the Metonic calendar, being full in sequence, the next month to both, Boëdromion, by the law of the cycle must have been *cavus;* and if so, must have had an exemtile day: which day, in this instance at least, was not the *second,* if that corresponded to the 24th of the Prytany of the time being. Yet neither was it the *third,* which in this list must have corresponded to the 25th of the Prytany: though, according to the true scheme of the exemtile days in the cycle of Meton, as it will be seen hereafter, when two months were full consecutively, the exemtile day was the *third* of the next to them. Mr. B. indeed adopts Mr. Ideler's hypothesis of the exemtile day: but even according to that, after two full months, the first exemtile day should have been the fourth of the next in order: and yet the fourth of Boëdromion this year, in this list, was not exemtile.

These considerations may reasonably lead us to suspect that after all, Boëdromion this year was not an hollow month; and therefore might

6 § 2. 7 § 3. 8 § 4. 9 § 5. 10 § 6. 11 § 7. 12 § 8. 13 § 9. 14 § 10. 15 § 11. 16 § 12.

have a second of the month as usual. With regard to the date of the inscription, the only clue to its discovery is the fact of its having been found on the reverse of the Choiseul marble [17], the date of which is fixed by its own testimony to the year of Glaukippus, B. C. 410: and we willingly acquiesce in Mr. B.'s reasons [18] for assuming it to have come between Ol. xcii. 4, and xciii. 3, i. e. B. C. 409 and 406; and very probably in B. C. 409 itself.

Now it will appear hereafter from our scheme of the Metonic calendar, that this year, which answered to Period i. 24. Cycle ii. 5, was intercalary *secundum ordinem;* and that Hecatombæon the first month being full, Metageitnion the next to it was hollow, but Boëdromion the third in order was full, and of course had its second of the month. So much for the character of Boëdromion this year, B. C. 409. As to that of Metageitnion, in the 5th year of the cycle of Meton, in which it was hollow, the exemtile day was the 12th of the month; and as the reckoning of the Prytanea in this month (so much of it at least as is still extant on the marble) begins on the 13th of the Prytany the 21st of the month, it begins *after* the exemtile day, and whether it took the 12th of the month into account or not, cannot be determined for certain from its own testimony at present. It must indeed have begun on the ninth of the month; and it may be said that it recognises twelve days complete between the ninth of the month, the first of the Prytany, and the 21st, the thirteenth. But if we consider what the rule was with respect to the reckoning of the exemtile day in the order of the days of the month, viz. not to treat it as if it were actually taken out of the month, but merely to suppress and pass it over—we shall see that in reckoning the days of a Prytany of any kind too, from a certain date before an exemtile day to a certain date after it, nothing would be more agreeable to the usual modes of thinking and speaking in such cases, than to take no express account of the exemtile day, but to reckon the interval continuously as if there had been no such day. The 13th of the current reckoning of the Prytany on this principle would be the 21st of the month, the δεκάτη φθίνοντος of Metageitnion. By this explanation every thing is rendered consistent; and the testimony of this Inscription, instead of contradicting our conclusions, confirms them.

SECTION III.—*On the popular idiom among the Greeks, in speaking of their lunar year and lunar month.*

The conclusions which have thus been established enable us to explain a certain habitual association of ideas, and a certain popular idiom, in classical Greek writers, later than Solon, when thinking or speaking of their lunar year and lunar month, as well as among the later Greeks in general; which have led to differences of opinion and erroneous

[17] No. 147. [18] Page 225: 228–231.

inferences, on these subjects, among modern chronologers. By the Greek lunar year and month however, we understand the Attic lunar year and month in particular.

Forasmuch then as it now appears that from the time of Solon at least the Greek year, though essentially lunar, was nominally solar, and every month in it nominally thirty days long; it is evident that people familiar with this mode of regarding it, especially where there was no occasion to use any but popular language about it, would think and speak of it accordingly: would talk of the whole year as if it consisted of 360 days, though really consisting of 354; and of every month in it as a month of 30 days, though in reality in every other instance only one of 29. Of these modes of thinking and speaking we will adduce some examples.

i. An ænigma is ascribed to Cleobulus of Lindus*: *Φερέται δ' αὐτοῦ*, says Diogenes[u], *ἐν τοῖς Παμφίλης ὑπομνήμασι καὶ αἴνιγμα τοιόνδε·*

> *Εἷς ὁ πατὴρ παῖδες δὲ δυώδεκα· τῶν δέ γ' ἑκάστῳ*
> *παῖδες ἔασι τριήκοντ' ἄνδιχα εἶδος ἔχουσαι·*
> *ᾗ μὲν λευκαὶ ἔασιν ἰδεῖν, ᾗ δ' αὖτε μέλαιναι·*
> *ἀθάνατοι δέ τ' ἐοῦσαι ἀποφθινύθουσιν ἅπασαι.*

Ἔστι δὲ ὁ ἐνιαυτός: he observes upon it. Cleobulus of Lindus was one of the seven wise men; and a contemporary of Solon's; and older than the first Lunar Correction in the island of Rhodes: and therefore his riddle was probably meant of the equable solar year and equable solar month. But Diogenes and others of the ancients quote it as if intended of

* Suidas (*Κλεοβουλίνη*) ascribes this ænigma to Cleobuline the daughter of Cleobulus: *Κλεοβουλίνη Λινδία θυγατὴρ Κλεοβούλου τοῦ σοφοῦ· ἔγραψεν ἔπη καὶ γρίφους, καὶ τὸ ᾀδόμενον εἰς τὸν ἐνιαυτὸν αἴνιγμα, οὗ ἡ ἀρχή·*

> *Εἷς ὁ πατὴρ παῖδες δὲ δυώδεκα· τῶν δὲ ἑκάστῳ*
> *παῖδες τριάκοντα—*

Stobæus also quotes it (Eclogæ Physicæ i. 240. ix. 37 Cleobuli), and reads the second line very differently:

> *Εἷς ὁ πατὴρ παῖδες δὲ δυώδεκα· τῶν δέ γ' ἑκάστῳ*
> *κοῦραι ἑξήκοντα διάνδιχα εἶδος ἔχουσαι.*
> *αἱ μὲν λευκαὶ ἔασιν ἰδεῖν αἱ δ' αὖτε μέλαιναι,*
> *ἀθάνατοι δέ τ' ἐοῦσαι ἀποφθινύθουσιν ἅπασαι.*

In this representation the day is regarded as made up of a day and a night, and every month is supposed to have 30 days and 30 nights, 60 of both.

[u] Vita, Lib. i. cap. vi. § iii. Cf. Anthologia, i. 52. Cleobulus, ii.

the lunar year of their own time; to which consequently it must in their apprehension have been just as applicable.

ii. The authors who have left an explanation of the terms *τριττὺς*, *φατρία* or *φρατρία*, *γένη* and the like, as applicable to certain comprehensive divisions of the community or body politic among the Athenians, tell us these were subdivisions of the tribes or *φυλαὶ*, and of each other; that according to the original constitution of Solon, the people were first divided into *φυλαὶ* or tribes, four in number, in imitation of the four seasons of the natural year, and then each tribe into three *τριττύες*, or *φρατρίαι*, or *ἔθνη*, and consequently all four into twelve, in imitation of the 12 months; and each *τριττὺς*, *φρατρία* or *ἔθνος*, into 30 *γένη*, all twelve into 360, in imitation of the days of the year; and each *γένος* finally into 30 men—each *τριττὺς* or *φρατρία* into 900 *. These distinctions, and the reasons or principles on which they are said to have been founded, may be real or may be imaginary; but in either case they are equally well calculated to illustrate the habits of thinking and speaking of which we are treating; and in

* Eustathius [1], quoting from Ælius Dionysius: Ὅτι τεσσάρων οὐσῶν ποτε φυλῶν Ἀθήνησι, πρὸς μίμησιν τῶν τοῦ ἐνιαυτοῦ ὡρῶν εἰς τρία ἑκάστην διεῖλον μέρη, ἤγουν εἰς φατρίας (ὅ ἐστι τριττῦς) δώδεκα, καθ' ὁμοιότητα τῶν μηνῶν· ἑκάστην δὲ φατρίαν εἰς γένη τριάκοντα, καθάπερ ἡμέραι τριακόσιοι ἑξήκοντα κ᾽, τ. λ.—Τὸ δὲ γένος ἔχει ἄνδρας λ′. αἱ δὲ φρατρίαι ἐκαλοῦντο τριττῦς, ὅτι τεσσάρων φυλῶν οὐσῶν εἰς τρία ἑκάστην διεῖλον μέρη, τὰς μὲν φυλὰς δ′, κατὰ τὰς ὥρας τοῦ ἐνιαυτοῦ, τὰς δὲ φρατρίας καὶ τριττύας δυοκαίδεκα, οἷον μῆνας, τὰ δὲ γένη λ′ ἐν ἑκάστῃ φρατρίᾳ, καθάπερ ἡμέρας τξ′. δυοκαίδεκα γὰρ λ′ τξ′.[2]—Suidas, Γεννηταί· Οὐχ οἱ ἐκ γένους, καὶ ἀφ' αἵματος προσήκοντες, ἀλλ' οἱ ἐκ τῶν γενῶν τῶν συννενεμημένων εἰς τὰς φρατρίας· οὗτοι δέ εἰσι καθάπερ οἱ δημόται καὶ φράτορες νόμῳ τινὶ ἔχοντες κοινωνίαν. τὸ δὲ γένος ἔχει ἄνδρας λ′. αἱ δὲ φρατρίαι ἐκαλοῦντο τριττῦς, ὅτι τεσσάρων φυλῶν οὐσῶν εἰς τρία ἑκάστην διεῖλον μέρη, τὰς μὲν φυλὰς τέσσαρας ποιήσαντες, ἀπομιμησάμενοι τὰς τοῦ ἐνιαυτοῦ ὥρας, τὰς δὲ φρατρίας καὶ τριττῦς ιβ′, καθάπερ οἱ μῆνες. τὰ δὲ γένη λ′ ἐν ἑκάστῃ φρατρίᾳ, καθάπερ αἱ ἡμέραι τξε′, corr. τξ′. Cf. in Φατρία, Φράτερες: Φράτορες: Harpocration, Γεννῆται: τριττῦς: Pollux, viii. ix. 30 περὶ δημάρχων (cf. Phot. Lex. Ναυκράρια): 31. περὶ τριττυάρχων: iii. iv. 1. p. 292: Anecdota Græca, 313. Φράτορες: Steph. Byz. Φατρία: Etym. M. γεννῆται: τριττύς: ἀφρήτωρ: Phot. Lex. τριττύς: Schol. ad Aves, 766. φυσάτω πάππους: Schol. ad Il. B. 362: I. 63: Athenæus, xi. 3.

[1] In Iliad. B. 362. 239. 39. cf. Schol. in Demosth. Adv. Macartatum, 1054. 3, R. Adv. Eubulidem, 709. 4, R.

[2] Scholia in Platon. ii. 382. Philebus, 173. 1: cf. 406, 407. Respubl. v. 263. 19: 424. Timæus, 11. 5: 465. Axiochus, 515. 32.

neither case could such explanations have been older than the distinctions in the calendar introduced by Solon.

iii. Πὰρ δ' ἴθι χαλκεῖον θῶκον καὶ ἐπαλέα λέσχην
ὥρῃ χειμερίῃ [o].—

on which Proclus: Ὅτι δὲ τοὺς ἀλεεινοὺς οἴκους οἱ πένητες κατελάμβανον, ἐν οἷς συγκαθήμενοι ἐν λαλιαῖς ἦσαν, δῆλον, καὶ ὅτι λέσχας ἐκάλουν τούτους· καὶ γὰρ ἐν Ἀθήναις ἦσαν τοιοῦτοι τόποι, καὶ ὠνομάζοντο λέσχαι, ἑξήκοντα καὶ τριακόσιαι κ', τ. λ.* i. e. as

* Pollux[1], Ἐκ δὲ τῶν τῆς πόλεως μερῶν καὶ λέσχαι—Λέσχη .... καὶ ὁ δημόσιος τόπος ἐν ᾧ διέτριβον οἱ πτωχοὶ καὶ διελέγοντο ἀλλήλοις ... καὶ τοὺς ἀλεεινοὺς τόπους Λέσχας καλοῦσιν[2].—Τόπον ἀθύρωτον δημόσιον, ἔνθα συνιόντες λόγοις καὶ διηγήμασιν ἀλλήλους ἔτερπον ... ὠνόμασται δὲ παρὰ τὸ λέχος, ἐπεὶ ἐκεῖ ἐκοιμῶντο οἱ πτωχοὶ παρὰ τὸ πῦρ[3]—Ἦν δὲ λέσχη δημόσιον ἀθύρωτον οἴκημα, ἔνθα οἱ ἐπαῖται συναγόμενοι ὡς λέχος τὸ αὐτὸ εἶχον, καὶ ἐλέσχαινον δὲ, ὅ ἐστιν ὡμίλουν[4]—Τὰ χαλκεῖα παρὰ τοῖς παλαιοῖς ἄθυρα ἦν, καὶ ὁ βουλόμενος εἰσῄει καὶ ἐθερμαίνετο, καὶ οἱ πένητες ἐκεῖ ἐκοιμῶντο· λέσχη δέ ἐστι τόπος τις δημόσιος, ἀνειμένος τοῖς βουλομένοις διαιτᾶσθαι[5] κ', τ. λ.—Νεοπτόλεμος ἐν τῷ περὶ γλωσσῶν φησὶ λέσχην εἶναι ὄνομα αὐλῆς, ἐν ᾗ πῦρ ἐστι[6]—Λέσχαι παρὰ Βοιωτοῖς τὰ κοινὰ δειπνητήρια· τινὲς δὲ τὰ φρύγια καὶ τοὺς ἀλεεινοὺς τόπους λέσχας καλοῦσι· συμβαίνει γὰρ τοὺς ἐν ταῖς οἰκίαις ταύταις χάριν θέρμης καθεζομένους λόγους συναίρειν[7] — Λέσχας ἔλεγον δημοσίους τινὰς τόπους, ἐν οἷς σχολὴν ἄγοντες ἐκαθέζοντο πολλοί ... Κλεάνθης ἐν τῷ περὶ θεῶν ἀπονενεμῆσθαι τῷ Ἀπόλλωνι τὰς λέσχας φησὶν, ἐξέδραις δὲ ὁμοίας γίνεσθαι αὐτὰς, καὶ παρ' ἐνίοις τὸν θεὸν λεσχηνόριον ἐπικαλεῖσθαι[8]—Καὶ λεσχηνόριον δ' αὐτὸν προσηγόρευσαν, διὰ τὸ τὰς ἡμέρας ταῖς λέσχαις καὶ τῷ ὁμιλεῖν ἀλλήλοις συνέχεσθαι τοὺς ἀνθρώπους, τὰς νύκτας δὲ καθ' ἑαυτοὺς ἀναπαύεσθαι[9]. And hence the λέσχη at Delphi, described by Pausanias[10], and so called, Ὅτι ἐνταῦθα συνιόντες τὸ ἀρχαῖον τά τε σπουδαιότατα διελέγοντο, καὶ ὁπόσα μυθώδη.

Τί δή ποτε Χαλκιδεῖς τὸν περὶ τὸ Πυρσόφιον τόπον ἀκμαίων λέσχην καλοῦσιν[11];—Ἀλλὰ μὴ τὸ πλεῖστον τῆς ἡμέρας περὶ τὰ γυμνάσια καὶ τὰς καλουμένας λέσχας ἀναστρέφεσθαι[12] — Ἀδολεσχία ... ἢ ἐκ τοῦ ἄδω τὸ ἀρέσκω καὶ τοῦ λέσχη· ... ἐπειδὴ τὸ παλαιὸν ἔθος ἦν, καὶ τῷ χειμῶνι τόπον εἶχον ἀποκεχωρισμένον, ἐν ᾧ πυρκαϊὰς ποιοῦντες ἐν αὐτῷ καθεζόμενοι διημέρευον, ἀδολεσχοῦντες καὶ φλυαροῦντες[13].

[o] Hesiod, Opp. et Dies, 491.

1 ix. v. 1013. § 49.
2 Hesychius, in voce: cf. Suidas, Λέσχη.
3 Scholia ad Odyss. Σ. 329. Ἐς λέσχην.
4 Eustathius, in Od. Σ. 328. 1849. 1.
5 Scholia in Hesiod. 491.
6 Ibid. pag. 252. Hence, Menander, ἀλέας Ἀθήνας.
7 Etym. M. Λέσχη.
8 Harpocration, Λέσχαι. cf. Suidas, Λέσχαι and Λέσχη.
9 Phurnutus, 32. De Apolline: cf. Plut. De Eἰ Delphico, ii. Hesychius, λεσχηνεῖ· ὁμιλεῖ.
10 x. xxv. 1–xxxi ad fin. cf. iii. xiv. 2. the λέσχη Κροτανῶν at Sparta, and iii. xv. 6 the λέσχη καλουμένη ποικίλη.
11 Plutarch. Quæst. Græcæ, xxxiii.
12 Lycurgus, xxv.
13 Etym. M. in voce. Cf. Parœm. Græc., e Cod. Bodl. 165. p. 16. ἀηδόνες λέσχαις ἐγκαθήμεναι.

many as the days of the year,—no doubt those of the lunar year.

iv. It appears from Hippocrates, Ἐπιδημιῶν τὸ β′, or whosoever was the author of the treatise so entitled, attributed to him, that nine Greek months, as he calls them, were to be reckoned at 270 days, which was at the rate of 30 days to each: *Ἃ δεῖ εἰδέναι εἰς τὸν ἑπτάμηνον, ἢ ἀπὸ γυναικείων ἀριθμητέον οἱ ἐννέα μῆνες ἢ ἀπὸ τῆς ξυλλήψιος, καὶ εἰς* (corr. *ἐν*) *ἑβδομήκοντα καὶ διακοσίῃσιν οἱ Ἑλληνικοὶ μῆνες γίνονται, καὶ εἴ τι προσέτι τούτοισιν*[p]. Yet from other passages[pp] it is clear that he reckoned the length of one natural month at 29 days 12 hours, that of two at 59 days, and the *νουμηνία* or first day of the month not quite $\frac{1}{30}$ part of the whole, and any two days not quite $\frac{1}{15}$; and five months equal to $147\frac{1}{2}$ days: all which was strictly in conformity to the actual length of the months in the octaëteric cycle, alternately 29 and 30 days, or 30 and 29.

v. Aristotle puts 30 days, 60 days, or the like, absolutely for one month, two months, and so on[q]. Speaking of serpents, he says they have as many ribs as there are days in the month: Πλευρὰς δ' ἔχουσιν ἴσας ταῖς ἐν τῷ μηνὶ ἡμέραις· τριάκοντα γὰρ ἔχουσι[r]: and where he is treating *de canibus*[s],

> Ἐν δὲ ταῖς λέσχαισι φύσκαι προσπεπατταλευμέναι
> κατακρέμανται τοῖσι πρεσβύταισιν ἀποδάκνειν ὀδάξ[14].
>
> Ἦ γὰρ ἐπὸς τόδ' ἀληθὲς ὅτ' οὐ μόνον ὕδατος αἶσαν
> ἀλλά τι καὶ λέσχης οἶνος ἔχειν ἐθέλει[15].
>
> Εἶπέ τις Ἡράκλειτε τεὸν μόρον· ἐς δέ με δάκρυ
> ἤγαγεν· ἐμνήσθην δ' ὁσσάκις ἀμφότεροι
> ἥλιον λέσχῃ κατεδύσαμεν[16].
>
> Ὅτι σύγκλητον
> τήνδε γερόντων προὔθετο λέσχην[17].
>
> Μακραί τε λέσχαι καὶ σχολὴ τερπνὸν κακόν[18].
>
> Λέσχας πονηρὰς καὶ κακοστόμους φιλεῖ[19].

p Opp. iii. 454, l. 4.

pp Opp. i. 444. περὶ Ἑπταμήνου ad princip. cf. i. 458, 459. περὶ Ὀκταμήνου.

q De Anim. vi. 4, 160. 3–9: 12. 167, 24: 20. 183, 21: 17. 174, 29: 175, 1: 30. 193, 1. viii. 25. 235, 12.

r De Anim. ii. 17. 48. 24. cf. Antigonus Carystius, Ἱστορ. παραδ. συναγωγή. cap. lxxviii.

s vi. 20: 182. 30—183. 8. cf. Pliny, H. N. x. 83. p. 185.

14 Κρατῖνος ἐν Πλούτοις. Athen. iv. 16.

15 Simonides, ccv.

16 Callimachus, Epigr. ii.

17 Soph. Antigone, 159.

18 Eurip. Hippolytus, 384.

19 Iphigenia in Aulide, 1001.

he reckons 60 days $=\frac{1}{6}$ of the year, $72=\frac{1}{5}$, and a fourth part equal to *τρεῖς μῆνες ὅλοι*, which on the same principle would be 90 days[t]. Xenophon also uses the same mode of speaking *de canibus*: *Κύουσιν ἑξήκονθ' ἡμέραις*[v]: no doubt in the same sense of two months: and that the calendar was lunar in his time he himself gives us to understand in the Memorabilia[x]: *Ἀλλὰ μὴν ἥ γε σελήνη οὐ μόνον τῆς νυκτὸς ἀλλὰ τοῦ μηνὸς τὰ μέρη ἡμῖν ποιεῖ.* In another instance, speaking of the length of time for which the cow went with calf, Aristotle observes[y]; *Κύει δ' ἐννέα μῆνας· δεκάτῳ δὲ τίκτει. ἔνιοι δὲ διισχυρίζονται δέκα μῆνας κύειν ἡμερολεγδόν*: i. e. by the calendar, day for day. Here he is probably to be understood as speaking exactly; for ten months by the calendar would be 354 – 59 or 295 days; but nine lunar months, each nominally 30 days long, would be only 270 days, and each of the mean length of one lunation would be only 266.

vi. It is recorded of Demetrius Phalereus that the Athenians erected 360 statues in honour of him between B.C. 317 and 307, during which period he was governing Athens under Cassander. *Δημηγορῶν δὲ παρὰ Ἀθηναίοις τῆς πόλεως ἐξηγήσατο ἔτη δέκα, καὶ εἰκόνων ἠξιώθη χαλκῶν ἑξήκοντα πρὸς ταῖς τριακοσίαις· ὧν αἱ πλείους ἐφ' ἵππων ἦσαν καὶ ἁρμάτων καὶ συνωρίδων, συντελεσθεῖσαι ἐν οὐδὲ τριακοσίαις ἡμέραις*[z]. That is, one for every day in the year: or as Varro, apud Nonium, observed on this fact,

Quot luces habet annus absolutus:

or as Pliny[a], Nullique arbitror plures statuas dicatas quam Phalereo Demetrio Athenis; siquidem CCCLX statuere, nondum anno hunc numerum dierum excedente: quas mox laceravere.

vii. Aristophanes[b],

Λυσίστρατος . . . Χολαργέων ὄνειδος,
ὁ περιαλουργὸς τοῖς κακοῖς
ῥιγῶν τε καὶ πεινῶν ἀεὶ
πλεῖν ἢ τριάκονθ' ἡμέρας
τοῦ μηνὸς ἑκάστου.

[t] Cf. Gaza, De Mensibus, viii. 290 C. Pollux, v. vii. 1.

[v] De Venatione, vii. 2.

[x] iv. 3. § 4.

[y] vi. 21. 185, 5.

[z] Diogenes Laertius In vita, Lib. v. cap. v. § ii.

[a] H. N. xxxiv. 12. There can be no doubt that 360 was the true number of these statues; though we find them stated at 300 only in Plutarch, Reip. Ger. Præcepta, xxvii: Strabo, ix. 1: Cornelius Nepos, Miltiades, vi: Ampelius, Liber Memorialis, xv. 174; and at 1500 in Dio Chrysostom, xxxvii. 122. 40.

[b] Acharnenses, 855. cf. Ecclesiazusæ, 808.

Strabo[c] tells us the Tarentines had more ἑορταὶ or holidays in their calendar than days in the year; meaning probably, that they kept 360 holidays though they had only 354 days: which they might do, by keeping two holidays on each of some six days and one on each of the rest. Polybius too[d] observes of the Bœotians, Ὥστε πολλοὺς εἶναι Βοιωτῶν οἷς ὑπῆρχε δεῖπνα τοῦ μηνὸς πλείω τῶν εἰς τὸν μῆνα διατεταγμένων ἡμερῶν: i. e. they dined twice on some one day or more.

viii. On this principle it was that the proper complement of the lunar month was commonly reckoned at 30 days, as much as that of the solar: Οὗτος γὰρ τέλειος μὴν ἀπὸ φάσεως εἰς σύνοδον[e]—Annus etiam unus si duodecim menses integri considerentur quos triceni dies complent, (talem quippe mensem veteres observaverunt, quem circuitus lunaris ostendit), senario numero pollet[f]—And again, Sexagenarius ergo numerus dierum sexta pars anni est. Theocritus[g],

> Εἴκατι ταίδ', ὄκτω ταίδ', ἐννέα ταίδε, δέκ' ἄλλαι,
> σάμερον ἑνδεκάτα· ποτίθες δύο· καὶ δύο μῆνες
> ἐξ οὗ ἀπ' ἀλλάλων.

That is, 20+8+9+10+11+2, 60 in all, or two months of 30 days each: as the scholiast also understands the passage. Τριηκάδες is explained by Suidas[h], among other things, of Ἀριθμὸν τριάκοντα ἡμερῶν: sums or numerical amounts of 30 days each; i. e. months, of that number of days. And in this sense the word is used absolutely by Lucian[i]: Πολλὰς τριακάδας καὶ Ὀλυμπιάδας ἀναπλήσας—Ὅτι σοι καὶ τὸν χρόνον παμπολὺν ὑπογράφει τῆς ὁδοιπορίας, ἔτη πολλά, οὐ κατὰ ἡμέρας, οὐ κατὰ τριακάδας, ἀλλὰ κατὰ Ὀλυμπιάδας ὅλας ἀριθμῶν[k]. And that he reckoned every month at 30 days appears from the following passage in his Parasitus[l]: Καὶ μὴν ἐκεῖνά γε οὐδείς ἐστιν ὅστις οὐκ ἐπίσταται, ὅτι οἱ μὲν τὰς λοιπὰς τέχνας ἐργαζόμενοι τὸν μὲν ἄλλον χρόνον ταλαιπωροῦσι, μίαν δὲ ἢ δύο μόνας τοῦ μηνὸς ἡμέρας ἱερὰς ἄγουσι. καὶ αἱ πόλεις δὲ τὰς μὲν δι' ἔτους τὰς δὲ ἐμμήνους ἑορτὰς διατελοῦσιν.... ὁ δὲ παράσιτος τοῦ μηνὸς τὰς τριά-

[c] vi. iii. cir. med. cf. Athen. iv. 61: Ælian, Varr. xii. 30: Eustathius ad Dionys. Per. 376.

[d] xx. 6, 6: cf. Athenæus, x. 11: xii. 23.

[e] Stobæus, Eclogæ Physicæ, i. 264. Lib. i. cap. ix. 42.

[f] Augustin, De Trinitate, iv. 4. quoted by Norisius De Epochis, i. i. 5. cf. De Civitate, xv. 12.

[g] Idyll. xiv. 44.

[h] In voce.

[i] ii. 929. De Luctu, 16. 85

[k] iii. 10. Rhetorica Præcepta, 10. 90.

[l] Opp. ii. 853. 15.

κονθ' ἡμέρας ἱερὰς ἄγει· πᾶσαι γὰρ δοκοῦσιν αὐτῷ εἶναι τῶν θεῶν. Athenæus has quoted the following statement in reference to Lycus the Peripatetic, from Antigonus of Carystus [m]. *Ἔδει γὰρ ἄρξαι τε τὴν νομιζομένην ἐν τῷ περιπατῷ ἀρχήν· αὕτη δ' ἦν ἐπὶ τῆς εὐκοσμίας τῶν ἐπιχειρούντων τριάκονθ' ἡμέρας, εἶτα τῇ ἔνῃ καὶ νέᾳ λαβόντα ἀφ' ἑκάστου τῶν ἐπιχειρούντων ἐννέα ὀβολοὺς κ',τ. λ.* Consequently these thirty days must have been meant absolutely of *one* month, the last of them being the last day of the month, the *ἔνη καὶ νέα.* Not however to mention any more instances of this mode of speaking, we will merely observe, that where the laws directed such and such a thing to be done within the space of one month, it is usual to find this exprest by 30 days; as for example, with regard to the *εὔθυναὶ*, or examination of the accounts of the magistrates just gone out of office, by the *λογισταὶ*, at the beginning of the new year; *Λογισταὶ . . . οἳ τὰς εὐθύνας τῶν διῳκημένων ἐκλογίζονται, ἐν ἡμέραις τριάκοντα, ὅταν τὰς ἀρχὰς ἀποθῶνται οἱ ἄρχοντες* [n].

ix. On this principle too we may most reasonably explain the well known passage of Herodotus in the conversation between Solon and Crœsus [o]. The limit of human life being assumed at 70 years, he makes Solon say: *Οὗτοι ἐόντες ἐνιαυτοὶ ἑβδομήκοντα παρέχονται ἡμέρας διηκοσίας καὶ πεντακισχιλίας καὶ δισμυρίας* (25,200), *ἐμβολίμου μηνὸς μὴ γενομένου· εἰ δὲ δὴ ἐθελήσει τοὔτερον τῶν ἐτέων μηνὶ μακρότερον γίνεσθαι, ἵνα δὴ αἱ ὧραι συμβαίνωσι παραγινόμεναι ἐς τὸ δέον, μῆνες μὲν παρὰ τὰ ἑβδομήκοντα ἔτεα οἱ ἐμβόλιμοι γίνονται τριήκοντα πέντε· ἡμέραι δὲ ἐκ τῶν μηνῶν τουτέων χίλιαι πεντήκοντα* (1050). *τουτέων τῶν ἁπασέων ἡμερέων τῶν ἐς τὰ ἑβδομήκοντα ἔτεα, ἐουσέων πεντήκοντα καὶ διηκοσίων καὶ ἑξακισχιλιέων καὶ δισμυριέων* (26,250), *κ', τ. λ.*

In a popular argument of this kind it was not necessary to take into account the precise length of the year. It might be assumed at 360 days; as Herodotus assumes it, reckoning 70 years = 25,200 days (360×70): and each month in like manner might be assumed at 30 days, as he assumes it, supposing 35 months = 1050 days (35×30), and the sum total of 70 years, assumed as above, plus 35 months, in days to be

[m] xii. 69. [n] Scholia in Demosth. De Corona, 266. 9, R. also Suidas in voce: cf. De Falsa, 406. 26. [o] i. 32.

26,250 days. The only real difficulty of the passage is the rule of intercalation (which it insinuates rather than inculcates), every other year, or 35 times in 70 years. Here however we must compare what he himself says in another passage of the intercalary rule of the Greeks, in contradistinction to that of the Egyptians[p]: *Πρώτους Αἰγυπτίους ἀνθρώπων ἁπάντων ἐξευρέειν τὸν ἐνιαυτὸν, δυώδεκα μέρεα δασαμένους τῶν ὡρέων ἐς αὐτόν· ταῦτα δὲ ἐξευρέειν ἐκ τῶν ἄστρων ἔλεγον. ἄγουσι δὲ τοσῷδε σοφώτερον Ἑλλήνων ἐμοὶ δοκέειν, ὅσῳ Ἕλληνες μὲν διὰ τρίτου ἔτεος ἐμβόλιμον ἐπεμβάλλουσι τῶν ὡρέων εἵνεκεν· Αἰγύπτιοι δὲ τριηκοντημέρους ἄγοντες τοὺς δυώδεκα μῆνας ἐπάγουσι ἀνὰ πᾶν ἔτος πέντε ἡμέρας πάρεξ τοῦ ἀριθμοῦ, καί σφι ὁ κύκλος τῶν ὡρέων ἐς τὠυτὸ περιιὼν παραγίνεται.* That the Greek year was thus supposed to contain five days less than the Egyptian, and therefore that, if the latter contained 365 days, the former must have contained 360, may safely be inferred from this statement. And that Herodotus must have intended by the Greek year a lunar year of this magnitude, follows from his supposing it to require an intercalary month: and so far his language is easily explained by the idiom which we have just been illustrating. The only difficulty, as we have observed, is the intercalary rule which it appears to require even in this lunar year, *διὰ τρίτου ἔτεος*, or every other year: nor, with respect to this, is it possible perhaps to acquit Herodotus of speaking loosely and vaguely, whether intentionally so or not. Yet even this description of the intercalary rule of the Greek lunar calendar, general and indefinite as it is, would apply to that of the octaëteris, with which he was most likely to be best acquainted; the Metonic correction not having been published when he was writing his History. The first intercalary month in this cycle and the third were both introduced at the end of three years; and though the proper sense of *διὰ τρίτου ἔτεος* is rather at the end of every two years, than at the end of every three, it might have this latter meaning also. The second intercalation took place at the end of the fifth year, just two years after the first; and to that this description of *διὰ τρίτου ἔτεος* would be strictly applicable.

[p] ii. 4,

Section IV.—*On the Divisions of the Month, and the proper Style of each.*

With regard to the divisions of the month, and the proper mode of distinguishing the component parts of each, both *inter se,* and from those of the rest, (the *style* of the calendar, properly so called); it is well known that every Attic month, (and we may add, every Greek lunar month,) from the time of Solon downwards, was divided into three, nominally the same or equal, periods of ten days each, called in the Greek language *Decads;* the first of which was that of the Μὴν ἱστάμενος, the second that of the Μὴν μεσῶν, the third that of the Μὴν φθίνων, or λήγων, or ἐξιὼν, or ἀπιὼν, or the like. So Hesychius, in Φθίνοντος μηνός· λήγοντος τοῦ μηνός· φθίνων δὲ μὴν καλεῖται ὁ ἀπὸ εἰκάδος ἕως τριακάδος· μέσος δὲ μὴν ὁ ἀπὸ δεκάδος ἕως εἰκάδος· ἱστάμενος δὲ μὴν ὁ ἀπὸ πρώτης ἕως πέμπτης (corrige ἐννάτης or δεκάτης).

It cannot however be assumed for certain, that Solon was the author of all these divisions, and their proper style respectively: for, as we have already observed[q], there is reason to infer from the testimony of Homer, that the equable solar month was divided into three equal periods also; and that these names of the μὴν ἱστάμενος, the μὴν μεσῶν or μέσος, the μὴν φθίνων, respectively, were common to it too. There is reason also to infer, that the days in each of these Decads were reckoned one after another, πρώτη, δευτέρα, τρίτη, and the like, just as they would be with us; nothing being added to discriminate the style of one from that of another, except the division of the month, πρώτη ἱσταμένου, πρώτη μεσοῦντος, πρώτη φθίνοντος, and the like.

Now this mode of designating them in particular Solon retained exclusively only in the first Decad of his month, that of the μὴν ἱστάμενος. In the second, the days of his lunar month are found reckoned not only according to this rule, πρώτη μεσοῦντος, δευτέρα μεσοῦντος, and so on, but straight forward, from the tenth to the nineteenth and twentieth of the whole month. In the last Decad the proper style of the lunar month of Solon began with the δεκάτη

[q] Supra, page 3. *n*.

φθίνοντος, in the sense of the 21st of the month *, and descended from that to the *ἐνάτη φθίνοντος*, in the sense of the 22d, and so on, in a retrograde order; decreasing by unity, down to the *δευτέρα φθίνοντος*, or 29th of the month, in such months as had 30 days, and to the *τρίτη φθίνοντος*, or 28th, in such as had only 29. Hence Hesychius, of the *δευτέρα φθίνοντος· ἀπὸ τῆς τριακάδος*—which requires to be corrected by reading *ἡ πρὸ τῆς τριακάδος*; the 29th of the month being meant. This peculiar style for the last decad of his lunar month, it is agreed, was the institution of Solon[r]; and therefore must have come into being with his lunar correction. It is the most regular of occurrence of all, and the most characteristic of the classical Greek calendar; and though originally devised for the lunar calendar, and properly applicable only to that, it was retained from the force of habit for the same days even in the solar †, and Gaza proposed to retain it in *his* calendar[s], which was intended to be solar too.

The proper style of the last day of this decad, (the last of the month,) as we have already explained[r], was both that of the *ἕνη καὶ νεὰ*, and that of the *τριακάς*: and for a time too, we are told, among the Athenians in particular, it received the name of *Δημητριὰς*[t], in honour of Demetrius, the son of Antigonus, and of the liberation of Athens B. C. 307.

* The style of the 21st of the month being properly that of the *δεκάτη φθίνοντος*, that seems to have been the reason why it acquired the name of *ὑστέρα δεκάτη*, or *δεκάτη ὑστέρα*: the most classical example of which is Demosthenes, De Falsa, xix. 66 = 359, where after reckoning without interruption from the 16th of the month to the *εἰκὰς*, he proceeds *Ὑστέρα τοίνυν δεκάτη, ἐνάτη, ὀγδόη*, and so on to the *τετρὰς φθίνοντος*: and again, *ὀγδόη, ἑβδόμη, ἕκτη, πέμπτη, τετρὰς*, from the 23rd to the 27th inclusive. To this use of the *δεκάτη ὑστέρα* for the 21st, the proper *ἀντίστοιχον* would be that of the *δεκάτη προτέρα*, for the tenth: and there is a classical instance of that too in the Will of Epictetus, for the 10th of Gamelion. Hesychius, *Δεκάτη προτέρα, ἡ πρὸ εἰκάδος, ὡς ὑστέρα ἡ μετ' εἰκάδα.* Etym. Magn. *Ὑστέρα δεκάτη· ἡ ἐξ εἰκάδος ἡμέρα καλεῖται ὑπὸ τῶν Ἀττικῶν, ἣν ἡμεῖς πρώτην καὶ εἰκοστὴν καλοῦμεν.* Cf. Photius, *Ὑστέρα δεκάτη.*

† The Sophist Aristides, for instance, speaks in this manner of the last ten days of the month Posideon in the calendar of Smyrna in his time, when it was now solar: *Ἱεροὶ λόγοι*, A. xxiii. 448. 10.–452. 17.

r Vide supra, p. 4. and 6.

s De Mensibus, xv. Uranol 301. D.

t Plutarch, Demetrius, xii: Cf. Harpocration and Suidas, *Ἕνη καὶ νέα*: Schol. in Pind. Nemea, iii. 1.

The following then is the scheme of the Attic lunar month, and of the Greek lunar month in general, according to these distinctions.

Scheme of the Attic lunar month, and of the Greek lunar month in general, and of the proper Style of each of its Divisions.

i. Δεκὰς πρώτη.

Μηνὸς ἱσταμένου.

Day of the month.			
1.	Νουμηνία, ...	or	πρώτη.
2.	δευτέρα ἱσταμένου	or	δευτέρα.
3.	τρίτη ἱσταμένου ..	or	τρίτη.
4.	τετάρτη ἱσταμένου	or	τετάρτη.
5.	πέμπτη ἱσταμένου	or	πέμπτη.
6.	ἕκτη ἱσταμένου ..	or	ἕκτη.
7.	ἑβδόμη ἱσταμένου	or	ἑβδόμη.
8.	ὀγδόη ἱσταμένου ..	or	ὀγδόη.
9.	ἐνάτη ἱσταμένου ..	or	ἐνάτη.
10.	Δεκάτη ἱσταμένου Δεκάτη προτέρα	or	δεκάτη.

ii. Δεκὰς δευτέρα.

Μηνὸς μεσοῦντος.

Day of the month.			
11.	Πρώτη μεσοῦντος.	ἑνδεκάτη.	
12.	δευτέρα μεσοῦντος.	δωδεκάτη.	δυοκαιδεκάτη.
13.	τρίτη μεσοῦντος.	τρισκαιδεκάτη.	τρίτη ἐπὶ δέκα. τρίτη ἐπὶ δεκάτῃ *.
14.	τετάρτη μεσοῦντος.	τεσσαρεσκαιδεκάτη.	τετρὰς ἐπὶ δέκα. τετάρτη ἐπὶ δέκα. τετάρτη ἐπὶ δεκάτῃ.
15.	πέμπτη μεσοῦντος.	πεντεκαιδεκάτη.	πέμπτη ἐπὶ δέκα. πέμπτη ἐπὶ δεκάτῃ.
16.	ἕκτη μεσοῦντος.	ἑκκαιδεκάτη.	ἕκτη ἐπὶ δέκα. ἕκτη ἐπὶ δεκάτῃ.
17.	ἑβδόμη μεσοῦντος.	ἑπτακαιδεκάτη.	ἑβδόμη ἐπὶ δέκα. ἑβδόμη ἐπὶ δεκάτῃ.
18.	ὀγδόη μεσοῦντος.	ὀκτωκαιδεκάτη.	ὀγδόη ἐπὶ δέκα. ὀγδόη ἐπὶ δεκάτῃ.
19.	ἐνάτη μεσοῦντος.	ἐννεακαιδεκάτη.	ἐνάτη ἐπὶ δέκα. ἐνάτη ἐπὶ δεκάτῃ.
20.	Εἰκὰς, εἰκοσὰς, Εἰκάδες.		

* We include in our synopsis of the second decad, and of its different styles, this variation also from the 13th inclusive upwards to the 19th, *τρίτη ἐπὶ δεκάτῃ κ᾽, τ. λ.*, as well as that of *τρίτη ἐπὶ δέκα κ᾽, τ. λ.*, because it is not destitute of authority. An example of it occurs Plut. Lysander,

iii. Δεκὰς τρίτη.

Μηνὸς φθίνοντος.

Day of the month.			
21.	Δεκάτη φθίνοντος.	Ὑστέρα δεκάτη. Ἀμφιδεκάτη. Ἀμφεικὰς, or Ἀμφ' εἰκάς [v]. Μετεικάς [x].	Εἰκὰς πρώτη *.
22.	ἐνάτη φθίνοντος.	.. .. ..	εἰκὰς δευτέρα.
23.	ὀγδόη φθίνοντος.	.. .. ..	εἰκὰς τρίτη.
24.	ἑβδόμη φθίνοντος.	.. .. ..	εἰκὰς τετάρτη.
25.	ἕκτη φθίνοντος.	.. .. ..	εἰκὰς πέμπτη.
26.	πέμπτη φθίνοντος.	.. .. ..	εἰκὰς ἕκτη.
27.	τέταρτη φθίνοντος. τετρὰς φθίνοντος.	τετρὰς μετὰ εἰκάδα. Ælian. Varr. iii. 23.	εἰκὰς ἑβδόμη.
28.	τρίτη φθίνοντος.	τρίτη μετὰ εἰκάδα. Ibid.	εἰκὰς ὀγδόη.
29.	δευτέρα φθίνοντος.	.. .. ..	εἰκὰς ἐνάτη.
30.	Ἕνη καὶ νέα [y]. τριακάς. εἰκὰς φθίνοντος [z]. Δημητριάς †.		

xv. ἕκτη ἐπὶ δεκάτῃ, for the 16th of Munychion. Cf. also Alexander, lxxvi.: Demosthenes, De Corona, xviii. § 200 = 279: Corpus Inscriptionum Græc. 2338. But it is not so classical as the other of τρίτη ἐπὶ δέκα, τετάρτη ἐπὶ δέκα, and the like. The usual rule in the use of this phrase is that the ordinal number should be followed by the cardinal, δέκα, not by the ordinal, δεκάτη.

* We have admitted also this particular style for the last ten days of the month, because there is authority for it: (cf. Aristophanes, Nubes 17; and the Scholia in loco: Euripides, Ion, 1076, and our Fasti Catholici, iv. 208 *n.*): though it resembles the modern, and in the best and most classical writers among the Greeks, it does not seem to have been used but when they were speaking of a solar reckoning in contradistinction to a lunar reckoning in this part of the month. In fact it is most probable that this particular style for the last decad was first rendered familiar to the Greeks by the introduction of the Julian calendar.

† The Scholiasts and Grammarians of antiquity often take occasion to

[v] Cf. Hesychius in voce. This term for the 21st of the month was peculiar to the Metonic calendar, in which the 21st was liable to be exemtile, and the 22d stepped into its place as the true 21st of the month.

[x] Cf. Proclus in Hesiod. Opera et Dies, 818.

[y] Varro, De Re Rustica, i. cap. 37: Quod nova luna crescit ad plenam et inde rursus ad novam lunam decrescit, quod (quoad) veniat ad intermenstruum, e quo die dicitur luna *extrema* esse et *prima*; a quo eum diem Athenis appellant ἕνην καὶ νέαν, τριακάδα alii—De Lingua Latina, v. p 54: A mensibus intermestris dictus: quod putabant inter prioris mensis senescentis extremos dies et novam lunam esse diem quem diligentius Attici ἕνην καὶ νέαν appellarunt, ab eo quod ea die potest videri *extrema* et *prima* luna.

[z] Scholia ad Nubes, 1132: Note on line 9. Cf. the same, ad Aves, 1128, ed. Invernitzii.

SECTION V.—*On the order of the Prytaneæ in the Lunar Calendar of the Athenians.*

The order and succession of Prytaneæ among the Athenians, through the course of the civil year, is another question relating to the administration and details of the Calendar, of which something requires to be said; especially as a date, of much consequence to the confirmation of our account of the Lunar Correction of Solon, (that of the battle of Marathon,) is closely connected with it. First however it is necessary to explain what was meant by these Prytaneæ themselves.

With regard to the number of the tribes before and after the time of Solon, something may be said by and by. At present we assume that whether in his time or not, yet long before the Metonic Correction, and while the calendar was still regulated by the octaëteric cycle, this number was TEN. The number of tribes then being *ten*, fifty persons were elected annually out of each; 500 in all: composing collectively the Athenian βουλὴ or senate, commonly called, from the number of its members, the senate of the φ′, or 500. Æschines calls each of these fifties, τὸ δέκατον μέρος τῆς πόλεως [a].

Now whether the name of πρυτάνεις was given to the entire body of 500, or only to some fifty of them at a time, is an uncertain point; but the truth seems to have been that no part

explain the structure and divisions of the Attic month, and the peculiar idioms or style of each. But there is generally some degree of error mixed up with what is true in these different accounts; for which reason we have not thought it advisable to confirm the preceding scheme by their testimony in particular; which would have required us to correct their statements as we proceeded. The reader however, who is so inclined, will find them under the following references: Scholia in Aristoph. ad Nubes, 1129. 1132. 1181. 1186. 1199: Anecdota Græca, 280. 30. Μετροῦσιν: Photii Lex. Μουνυχιών: Appendix ad Phot. 668. Ἕνη καὶ νέα: Etym. M. Ἕνη καὶ νέα: Suidas, Ἕνη καὶ νέα: Scholia in Platon. ii. 454: De Legibus, viii. 115, 5. Ἕνη καὶ νέα: Harpocration, Ἕνη καὶ νέα: Scholia in Demosth. p. 128: De Falsa, ad 231. αὐτὸ συμβαίνει: Ad 359. 6, Schol. e cod. Augustano apud Reiskium: (cf. Gaza, De Mensibus xv.: Uranol. 301 D): Hesychius, δυνδεκάτη: ἕνη: ἕνη καὶ νέα: ἕνης: νομάδες ἡμέραι, πλάνα: πράτα: πεμπάς: τριτομηνίς.

[a] iii. 4. Cf. Demosth. xxi. 163.

of the Athenian senate received or bore the name of πρυτάνεις, except the members of one of these fifties, while they were serving for one πρυτανεία, in their turn. And there being ten companies of this description, each of which served a tenth part of the year; none of them could serve less than 35 days in the common years (of 354 days), nor than 38, in the intercalary year (384 days). And these are the lengths at which we find the πρυτανεῖαι represented in general, 35 days or 38; the former, intended of their length in the common years of the cycle, the latter of that in the intercalary years.

These prytanes too for the time being (i. e. the members of some one of these companies of 50) were subdivided into five δεκαδαρχίαι, or companies of tens; each of which served for a fifth part of the whole length of the prytanea; i. e. not less than seven days at least: and out of each of these companies some one was every day appointed by lot to preside in the senate for that day, under the name of ἐπιστάτης and ἄρχων ἐφήμερος (archon for a day). In general however, the members of seven only of these subdivisions could serve this office in their turn; because the length of the prytaneæ in general did not exceed 35 days: and therefore we find it remarked that three out of the prytanes in every decad could never be Ἐπιστάται or archons of the day at all. This was possible however with some one of those decads in the prytanies of 38 days in length—if four of these decads served for seven days each, and the fifth for ten. But no individual prytanis could serve this office twice in the course of his own prytany.

There was an ἐπιστάτης then who presided in the senate with the style of ἄρχων ἐφήμερος; and possibly both he and the rest of the members of his prytany, while they were in office, might have the title of πρόεδροι also, in the senate, as well as out of it; though that too is an uncertain point. There was however another ἐπιστάτης—and another body of πρυτάνεις—draughted from those who composed the senate: with a special relation to the ἐκκλησία or public assembly of the people. For, among the other duties of the ἄρχων ἐφήμερος or ἐπιστάτης last described, *this* is specified as one; viz. as often as there was occasion (that is, as often as there was a public assembly of the people, four times in every prytanea, thrice in every month at least), out of the senators furnished by the other tribes, distinct from that one which was serving the office of *πρυτάνεις,* to appoint by lot some *ten,* to preside in those assemblies under the name of *Πρόεδροι*; and one of the number to preside over the rest under the name of Ἐπι-*στάτης*: so that there were certainly two kinds of *ἐπιστάται,* if not two kinds of *πρόεδροι,* one for the senate, the other for the assembly; one, at all times in the course of the year, within the senate, the other at stated times, and in the assembly. Such is the account in general which the grammarians and scholiasts of antiquity have left of these things.

Now, if the ordinary length of the prytanea, when the number of tribes was ten, may be assumed to have been 35 days; ten of these prytaneæ would take up 350 days: but the ordinary length of the year too being assumed at 354 days—there would be four days, over and above the last prytanea, to the end of the year. And with regard to these, Harpocration, Photius, Suidas, and others, would seem to imply that they were distributed *extra ordinem* to the first four prytaneæ of the year; so that each of these had 36 days, and each of the rest only 35. Nor can we undertake to say that this might not some time or other have been the rule. A very important monument however is extant, called the Choiseul marble; on which the course and succession of prytanies for the whole of the year happens to have been recorded: and in this particular year, the case was just the reverse of the above representation. The last four prytaneæ had 36 days each, all the preceding ones 35. And though the date of the marble is later than the Metonic Correction, that probably made no difference: especially as this year even in the Metonic cycle was one of 354 days only, the stated length of the common year in the Octaëteric Cycle.

With regard to the order of these prytanies; all our authorities * are unanimous in representing that it was every

* *Πρυτάνεις· τὸ δέκατον μέρος τῆς βουλῆς τῶν φ΄ . ν΄ ἄνδρες ἀπὸ μιᾶς φυλῆς, οἱ διοικοῦντες ἅπαντα τὰ ὑπὸ τῆς βουλῆς πραττόμενα . . . ἐπρυτάνευον δὲ ἐκ διαδοχῆς ἀλλήλαις αἱ δέκα φυλαὶ κληρῷ λαχοῦσαι* [1]—*Πρυτάνεις· μέρος τι*

[1] Harpocration, Suidas, Etym. M. *πρυτάνεις.*

τῆς βουλῆς τῶν πεντακοσίων τὸ δέκατον, πεντήκοντα ἄνδρες ἀπὸ μιᾶς φυλῆς . . . καὶ ἐπρυτάνευον κατὰ πρυτανείαν ἐκ διαδοχῆς ἀλλήλων αἱ φυλαὶ, διὰ τούτων τῶν ἀνδρῶν, κληρῷ λαχοῦσαι[2]—Βουλαὶ πόσαι ἦσαν . . . ἡ δὲ ἐκ τῶν πρυτάνεων συνεστῶσα· πρυτάνεις δὲ ἦσαν πεντακόσιοι· ἀπὸ γὰρ ἑκάστης φυλῆς πεντήκοντα ἦσαν πρυτάνεις ἀποδεδεγμένοι[3]—Πρυτάνεις δὲ τοὺς πεντήκοντα, οὓς εἴπομεν ἀεὶ προβαλλομένους ὑπὸ τῆς ἰδίας φυλῆς, καὶ πρυτανεύοντας τὸ δέκατον μέρος τοῦ ἐνιαυτοῦ[4]—Οἱ πρυτάνεις, οὗτοι τὴν βουλὴν συνάγουσιν ὁσημέραι πλὴν ἂν ἄφετός τις ᾖ, τὸν δὲ δῆμον τετράκις ἑκάστης πρυτανείας. καὶ προγράφουσι πρὸ τῆς βουλῆς καὶ πρὸ τῆς ἐκκλησίας ὑπὲρ ὧν δεῖ χρηματίζειν. τῶν δ' ἐκκλησιῶν ἡ μὲν κυρία, ἐν ᾗ τὰς ἀρχὰς ἐπιχειροτονοῦσιν, εἴπερ καλῶς ἄρχουσιν, ἢ ἀποχειροτονοῦσιν κ. τ. λ. ἡ δὲ δευτέρα ἐκκλησία ἀνεῖται τοῖς βουλομένοις ἱκετηρίαν θεμένοις λέγειν ἀδεῶς περὶ τῶν ἰδίων καὶ τῶν δημοσίων· ἡ δὲ γ' κηρυξὶ καὶ πρεσβείαις ἀξιοῖ χρηματίζειν . . . ἡ δὲ δ' περὶ ἱερῶν καὶ ὁσίων[5].

Πρυτάνεις εἰσὶ μέρος τι τῶν πεντακοσίων τὸ δέκατον, πεντήκοντα ἄνδρες οἱ διοικοῦντες ἅπαντα τὰ ὑπὸ τῆς βουλῆς πραττόμενα. καὶ ἐπρυτάνευον κατὰ πρυτανείαν ἐκ διαδοχῆς. πρυτανεία δέ ἐστιν ἀριθμός τις ἡμερῶν, ἤτοι λϛ' ἢ λη' ἢ λε', ἃς ἑκάστη φυλὴ πρυτανεύειν λέγεται. ιβ' μὲν γὰρ οἱ μῆνες, ι' δέ εἰσι πρυτανεῖαι καὶ φυλαὶ ι'. καὶ διῄρηνται εἰς ταύτας αἱ ἡμέραι τοῦ ἐνιαυτοῦ· κατὰ γὰρ σελήνην ἄγουσι τοῦτον· ὡς ἑκάστη τῶν ι' φυλῶν ἐπιβάλλειν λε' ἡμέρας, πλεονάζειν δὲ ὀλίγας. διὸ καὶ τὰς λοιπὰς ἀπέδωκαν οἱ Ἀθηναῖοι ταῖς πρώταις λαχούσαις τέτταρσι φυλαῖς, ἵνα ἐκείνων μὲν ἑκάστη τὰς λϛ' ἡμέρας πρυτανεύῃ, αἱ δὲ λοιπαὶ ἓξ ἀνὰ λε'[6]—Πρυτανεία . . . καθολικῶς μὲν ἡ πρυτανεία ἀριθμὸς ἡμερῶν τριάκοντα ἓξ ἢ τριάκοντα πέντε, ἃς ἑκάστη φυλὴ πρυτανεύειν λέγεται[7]—Ἔγνωμεν δὲ καὶ τοῦτο ἐν τοῖς Δημοσθενικοῖς ὅτι ἑκάστη τῶν δέκα φυλῶν τριάκοντα ἓξ ἡμέρας διῴκει τὴν πόλιν[8]—Πρυτανείας· ἔστιν ἀριθμὸς ἡμερῶν ἤτοι λϛ' ἢ λε'. καὶ ἑκάστη φυλὴ προτανεύει[9].—Πρυτανεία . . . πρυτανεῖαι δὲ ὁ τῶν ἡμερῶν ἀριθμός. δέκα ἐγίνοντο κατ' ἐνιαυτὸν, ὅτι καὶ δέκα αἱ φυλαί· ἐνιαυτὸν δὲ οἱ Ἀθηναῖοι τὸν σεληνιακὸν ἦγον. ἐπέβαλλον δὲ ἑκάστῃ φυλῇ τῶν δέκα λε' ἡμέραι, καὶ ἐπερίττευον ἐκ τοῦ σεληνιακοῦ ἐνιαυτοῦ ἡμέραι τέσσαρες, ἃς ἐμέριζον ταῖς πρώταις λαχούσαις πρυτανεύειν τέσσαρσι φυλαῖς. καὶ τῶν μὲν τεσσάρων πρώτων ἑκάστη εἶχε τὴν πρυτανείαν ἀπαρτιζομένην εἰς λϛ' ἡμέρας, αἱ δὲ λοιπαὶ ἓξ ἀνὰ λε'.[10]

Ἐπιστάται· Δύο ἦσαν Ἀθήνησιν, ὧν ὁ μὲν ἐκ πρυτάνεων ἐκληροῦτο ὁ δὲ ἐκ προέδρων . . . ὅτι τῶν φ' οἱ μὲν ν' πρυτάνεις, οἱ δὲ δέκα προέδροι, ὁ δὲ εἷς ἐπιστάτης[11]—Ἐπιστάτης· . . καὶ ἄρχων τις Ἀθήνησιν[12]—Τῆς γὰρ βουλῆς ἐπρυτάνευον δέκα, οἱ δέ φασιν ὀκτώ[13]—Πρόεδροι ἐκαλοῦντο, κληρούμενοι μὲν

[2] Anecdota Græca, 291. 4.

[3] Ibid, 222. 6.

[4] Scholia in Demosth. 261. Contra Timocraten, 278. 12. Ἐν τῇ πρώτῃ πρυτανείᾳ: 310. De Corona, 123. 4. Πρυτάνεις: 320. De Falsa, 344. 23. Οἱ πρυτάνεις.

[5] Pollux, viii. ix. 7. pag. 913. Cf. supra, pag. 48: also Hesychius, in ἕδραι.

[6] Scholia in Platon., ii. 459. De Legibus, xii. 303. 6.

[7] Anecdota Græca, 291. 11.

[8] Scholia in Æschinem, 390. De Corona, 165. 7. πρόεδροι. Cf. ad 392. p. 178. πρυτανείαν.

[9] Phot. Lexicon, πρυτανείας.

[10] Ibid. πρυτανεία. Cf. Suidas, πρυτανεία.

[11] Etym. M. in voce. Cf. Harpocration and Suidas, Ἐπιστάτης.

[12] Hesychius, in voce.

[13] Scholia in Aristoph. ad Pacem. 887. πρυτάνεις.

year determined by lot; though Dodwell, in his work *De Cyclis*[b], has been at much pains to prove that it was some time or other settled once for all, and as he has himself exhibited it. But the Choiseul marble confirms the statements of the ancient grammarians, (disproves at least the hypothesis of Dodwell,) by shewing the actual course of the pryta-

ὑπὸ τῶν πρυτάνεων καθ' ἑκάστην ἐκκλησίαν ἐξ ἑκάστης φυλῆς[14]—Πρόεδροι ἐκαλοῦντο οἱ πεμπόμενοι ἐν τῇ βουλῇ παρὰ τῆς πρυτανευούσης φυλῆς· οὗτοι δὲ πάλιν ἐπέμποντο παρὰ τῆς βουλῆς εἰς τὸν δῆμον, καὶ προκαθεζόμενοι ἐν τῷ θεάτρῳ—διὸ καὶ πρόεδροι ἐκλήθησαν—ἠρώτων τὸν δῆμον εἰ δοκεῖ αὐτοῖς[15] κ', τ. λ.—Τοὺς πρωτεύοντας· τῶν πεντακοσίων . . . ἔγνωμεν γὰρ ὅτι οἱ μὲν πρυτάνεις συνῆγον τὴν ἐκκλησίαν, οἱ δὲ πρόεδροι ὑπέβαλλον περὶ τίνος συνῆλθον[16]—Πρόεδροι· οἱ τὰ περὶ τὰς ἐκκλησίας Ἀθήνησι διοικοῦντες. εἷς ἐκληροῦτο ὑπὸ τῶν πρυτάνεων καθ' ἑκάστην ἐκκλησίαν ἐξ ἑκάστης φυλῆς· πρόεδροι δὲ ὅτι προεδρίαν εἶχον ἐν ταῖς ἐκκλησίαις[17]—Ἐκληροῦντο τῶν πρυτάνεων καθ' ἑκάστην πρυτανείαν εἷς ἐξ ἑκάστης φυλῆς, πλὴν τῆς πρυτανευούσης, οἵτινες τὰ περὶ τὰς ἐκκλησίας διῴκουν. ἐκαλοῦντο δὲ πρόεδροι, ἐπειδήπερ προήδρευον τῶν ἄλλων ἁπάντων. ὅτι δὲ ὁ καλούμενος ἐπιστάτης κληροῖ αὐτοὺς εἴρηκεν Ἀριστοτέλης ἐν Ἀθηναίων πολιτείᾳ[18]—Τῶν πρυτανέων εἷς ὁ λαχὼν ἐπιστάτης ἐλέγετο· δὶς δὲ τὸν αὐτὸν ἐπιστατῆσαι οὐκ ἐξῆν. φυλάσσει δὲ τοῦ ἱεροῦ τὰς κλεῖς ἐν ᾧ τὰ δημόσια χρήματα, ἔτι μὴν καὶ τὴν δημοσίαν σφραγῖδα. ἐπειδὰν δὲ οἱ πρυτάνεις συναγάγωσι τὴν βουλὴν ἢ τὸν δῆμον, ὁ ἐπιστάτης κληροῖ προέδρους ἐννέα, ἀπὸ φυλῆς ἑκάστης ἕνα πλὴν τῆς πρυτανευούσης. καὶ πάλιν ἐκ τῶν ἐννέα τούτων ἐπιστάτην ἕνα κληροῖ[19]—Εἷς τῶν πρυτάνεων ὁ κλήρῳ λαχών. δὶς δὲ οὐκ ἔξεστι γενέσθαι τὸν αὐτὸν ἐπιστάτην· ἔχει δὲ οὗτος κ', τ. λ. καὶ ὅταν οἱ πρυτάνεις τὸν δῆμον ἢ τὴν βουλὴν συνάγωσιν, οὗτος ἐξ ἑκάστης φυλῆς πρόεδρον ἕνα κληροῖ, μόνην τὴν πρυτανεύουσαν ἀφιείς[20]—Πρόεδροι ἐλέγοντο οἱ δέκα ἄνδρες οἱ καθ' ἑκάστην πρυτανείαν τὰ τῆς ἐκκλησίας διοικοῦντες. . . . ἦσαν δὲ πρυτανεῖαι δέκα, ὅσαι καὶ Ἀθηναίων φυλαί. εἶχε δὲ ἑκάστη φυλὴ πρυτάνεις πεντήκοντα, οἳ τὰ ὅλα διῴκουν ἡμέρας τριάκοντα πέντε. These were divided into five Δεκαδαρχίαι, or bodies of tens, οἳ ἡμέρας ἑπτὰ διῴκουν τὰ πολιτικὰ, καὶ προήδρευον κατὰ μέρος, καὶ οὕτω τρεῖς ἦσαν τῆς διοικήσεως ἄμοιροι· ὁ δὲ μίαν ἡμέραν τὰ ὅλα διοικῶν ἄρχων ἐφήμερος καὶ ἐπιστάτης ἐκαλεῖτο[21].

b De Cyclis, Dissertatio iii. cap. xxxvii to the end.

14 Anecdota, 290.

15 Scholia in Demosthen. 193. Contra Midiam, 22. 4. οἱ πρόεδροι: cf. 209. Con. Mid. 63. 8. πείσας τὸν πρυτανεύοντα.

16 Scholia in Demosth. 261. Contra Timocratem, 280. 4. τοὺς δὲ προέδρους.

17 Photii Lex. in voce.

18 Ibid. Cf. Scholia in Demosth. 336. Contra Timocratem, 325. 4. πρόεδροι.

19 Suidas, Ἐπιστάτης. Cf. our Fasti Catholici, i. 176.

20 Pollux, viii. ix. 8. 914. περὶ Ἐπιστάτου. Cf. Scholia in Platon. ii. 348. in Gorgiam, 59. 17. Ἐπιψηφίζειν.

21 Scholia in Æschin. De Falsa Legatione, 387. 3. R. Cf. in Demosthenem, xxii. Contra Androtionem, Argumentum secundum.

neæ of its particular year, (that of Glaukippus, B. C. 410–409,) in an order of succession which might have been, and probably was, determined by lot: and certainly is different from that proposed by Dodwell, as fixed and settled once for all. We may look upon this question then as set at rest; and the actual order of the prytaneæ in a particular year to be a matter of fact, which, from the nature of the case, can be known only from testimony.

The length of the Prytaneæ, or the number of days for which each of the Tribes was to serve every year in its turn, it is evident was not one of those things which would have to be determined every year by lot. The order of the Prytaneæ might be determined every year by lot. The length of the Prytaneæ would be determined by other considerations; by the length of the year, and the number of the Tribes, and the proportion of one to the other. And the years of the cycle of the calendar being of two kinds, the common, of 354 days in length, and the intercalary, of 384, the rule seems certainly to have been in years of 354 days to have six Prytaneæ of 35 days in length, and four of 36. And as to years of 384 days, in which a full month of 30 days had to be divided among the same ten Prytaneæ over and above their usual length, though there is no express testimony to the rule which was actually observed—in the calendar of Solon in particular, it seems most agreeable to the analogy of the rule in the common years, as well as to the reason of things, to suppose there were six Prytaneæ of 38 days in length, and four of 39.

With regard however to this question, as it applies to the Metonic Correction, an inscription is extant, first described by Chandler[c], which bears date ἐπὶ Νικοδώρου, B. C. 314–313.[d] Now this year corresponded to cycle vii. 5 of the Metonic Correction; and by rule it would be intercalary. The 26th day of the 6th Prytanea (Kecropis) is mentioned as coincident with Gamelion 11. The sum of days from Hecatombæon 1 to Gamelion 11, in the fifth year of the cycle, was 221 − 3, i. e. 218. Cast off 26 from this sum. The remainder

[c] Part ii. xi. pag. 50. cf. the Corpus Inscript. 105.

[d] Cf. Diodorus, xix. 66–73: Theophrastus, De Causis Plant. i. 19, 5: Pliny, H. N. iii. 9.

is 192. And these must have been divided among the five Prytaneæ of this year, before Kecropis: and consequently at the rate of 38 days apiece to three of them, and of 39 to the other two. Moreover the 26th day of the Prytanea falling on Gamelion 11, the first must have fallen on Posideon B 16—the intercalary month that year. And this day must have been the middle day of the year, 192 days after the beginning and 192 before the end. Kecropis the 6th Prytanea which entered on that day this year was the first of the five Prytanies which had yet to serve; the five preceding had taken up just 192 days, the first half of the year, and the five succeeding ones would take up the next 192 days, the second half of the year. Now we may reasonably suppose these coincidences could not have been undesigned; and therefore that in every year of this kind, containing 384 days, the rule in the Metonic Correction must have been to divide the first half of it among the first five of the Prytanies, 38 days to each of the first three, and 39 to each of the other two: and the second half in the same way among the last five.

Indeed with regard to the distinction of the Prytanies in the cycle of Meton, it is more than probable that because of the peculiar rule of the exemtile day, it could have followed no general and uniform law, in every year of the cycle alike; it must have required a different one for different years. Some years contained 354 days: and to these the rule of the common years in the old octaëteric cycle, whatsoever that might have been, would be applicable. Others consisted of 384 days; and to such as these the old rule in the intercalary years might also be applicable. But there were four common years in every Metonic Cycle, which contained 355 days: to these the old rule of the common years would not apply without some modification. There was one year of 383 days and one of 385 in every cycle; and to these too the old rule in the intercalary years could not apply without some change. It is probable therefore that if the length of the different Prytaneæ was something fixed in the calendar of Meton, it was differently fixed for every year of the cycle, or fixed in the same way only in those years of the cycle which agreed in other respects; and therefore that in a given year and in a particular instance nothing can be known of it at present except from testimony.

In the calendar of Solon the state of the case was different. Every year of the same denomination was of an uniform character: one common year the same as another, and one intercalary year as another. The scheme of the Prytanies, once settled for one common year of such a cycle, was settled for every common year; and once settled for one intercalary year, was settled for every year of the same denomination. In this calendar then there would seem to be no objection *a priori* to the following Type or Exemplar of that scheme: in which nothing is indefinite but what from the nature of the case must be so; viz. the actual order of particular Prytanies, if that was determined by lot: but the length or duration of each in years of either description was capable of being laid down once for all as follows *.

Scheme of the Order and Length of the Prytaneæ in the Calendar of Solon.

Common years.				Intercalary years.			
Order	Date	Length	Sum collected	Order	Date	Length	Sum collected
i	Gamelion 1	35 days	0	i	Gamelion 1	38 days	0
ii	Anthesterion 7	35	35	ii	Anthesterion 10	38	38
iii	Elaphebolion 12	35	70	iii	Elaphebolion 18	38	76
iv	Munychion 18	35	105	iv	Munychion 27	39	114
v	Thargelion 23	35	140	v	Skirrhophorion 7	39	153
vi	Skirrhophorion 29	35	175	vi	Hecatombæon 16	38	192
vii	Metageitnion 5	36	210	vii	Metageitnion 25	38	230
viii	Boëdromion 12	36	246	viii	Pyanepsion 4	38	268
ix	Pyanepsion 18	36	282	ix	Mæmacterion 12	39	306
x	Mæmacterion 24	36	318	x	Posideon A. 22	39	345
i	Gamelion 1		354	i	Gamelion 1		384†

* Mr. Grote indeed (History of Greece, iv. 219, 220) is of opinion that in the time of Solon, and while the number of the Tribes was still four, and that of the senate 400, there were no Prytanies; and that these were first instituted by Cleisthenes. It makes no difference to our purpose, whether this was so or not, if even the institution as made by Cleisthenes must have been adapted to the calendar of Solon; the only one in use at Athens in his time.

† The oldest divisions of the Body Politic among the Athenians, and of the cities or settlements in Attica, and even of the surface of the country in general, (which tradition appears to have traced up to their earliest kings,) to say the least of them, are obscure at present and uncertain; and possibly even fabulous. Such distinctions might have existed among them

CHAPTER IV.

On the names of the months in the Attic Lunar Calendar.

SECTION I.—*Reasons for concluding that these names must have been given them by Solon when he corrected the Calendar.*

We have more than once had occasion to express an opinion that the months of the Civil Calendar, at first, had no names but those of order and number; and that the con-

before the time of Solon; but not as the work of such kings as Kecrops or Cranaus [1], of whose very existence there is good reason to doubt.

All that can be assumed for certain on these points is that, from the time of Solon downwards, and most probably by his appointment, the number of Tribes was four, and the numbers of the senate were four hundred; one hundred from each of the Tribes [2]. But whether all or any part of these were called πρυτάνεις—and whether there was a cycle of Prytanies adapted to the senate of 400, in his time and by his appointment, and if so, what it was,—these are points on which more information is necessary before we could venture to give an opinion. There is reason however to believe that those who were afterwards called Πρυτάνεις—in the time of Solon were called Ναύκραροι [3].

It appears to be agreed that the commonly recognised division of the δῆμος of Attica into Ten Tribes, and of these Ten Tribes into a proportional number of Δῆμοι, was the work of Cleisthenes, one of the Alcmæonidæ [4]; the author of many important changes in the constitution of the Athenians in other respects also, and all at the same time,—soon after the expulsion of the Pisistratidæ, B. C. 511 or 510. Consequently soon after the beginning of the xith cycle of the octaëteris of Solon; which had run through half its proper period exactly, and was just 80 years old, Gamelion 1 Cycle xi. 1, Jan. 19 B. C. 512. And this continued to be the number of the Tribes down to B. C. 307—when two more were added, one in honour of Antigonus, the other in honour of Demetrius his son, (by whom

[1] Cf. Pollux, viii. ix. 31 περὶ τριττυάρχων: iv. xiv. p. 411. (cf. p. 406 τετράκωμος:) Strabo, ix. i. 242 b. (cf. Steph. Byz. Ἀθῆναι:) viii. 6. 206 b: 7. 218 b—219 a: Schol. ad Vesp. 1218: ad Lysistr. 285: Suidas, Ἐπακρία, Παράλων: Steph. Byz. Ἀκτὴ, Διακρεία, Ἐπακρία, Τετράπολις: Etymol. Magn. Ἄστυ, Ἐπακρία χώρα: Festus, xv. 406. 7 Quadriurbem: Schol. in Aristidem, (Panath.) xiii: iii. 75. 1: 321. 20: Herodotus, v. 66: Euripides, Ion, 1575–1581: Steph Byz. Αἰγικόρεως: Corpus Inscript. 3078, 3079, 3665 (Teos and Kyzicus).

[2] Plutarch, Solon, xix. cf. xxiii.

[3] Herod. v. 71.

[4] Herod. v. 66: 69. cf. Pollux, viii. ix. 31: Etym. M. Ἐπώνυμοι: Pausanias, x. x. 1: Schol. in Demosth. 176 adv. Leptinem, 468. 5: Schol. in Aristidem, xlvi. Ὑπὲρ τῶν τεττάρων: iii. 650. 28. cf. 331. 20. In xiii. Panathen.

tinuance of this mode of distinguishing them asunder was one of the most certain criterions of a calendar originally the

Athens had just been liberated from the dominion of Cassander,) called after them Antigonis and Demetrias respectively[5]. And these names too were afterwards changed into those of Ptolemais and Attalis[5]; the former in honour of Ptolemy Euergetes,—the first of that name, and the third of the Ptolemies in Egypt; consequently some time between B. C. 247 and 222, the limits of his reign. And when the name of Ptolemy was thus given to one of the Tribes, that of Berenike his queen was given to one of the δῆμοι[6]. The tribe Attalis received its name from Attalus the third king of Pergamus; and as it may be collected from the contemporary history, B. C. 201.[7]

From B. C. 307 then the number of the Tribes was Twelve; though the names of all the Twelve did not continue the same. In the reign of the Roman Emperor Adrian, a 13th Tribe was added, out of compliment to him; and called Ἀδριανὶς after him: of which it is surprising that no mention should have been made by Pollux[8], considering that it was certainly added in the reign of Adrian, (very probably A. D. 127 or 128,) and Pollux himself was writing in the reign of Marcus Aurelius; and it is mentioned by Pausanias[9], who was his contemporary, and writing about the same time.

Having given this brief sketch of the history of the Φυλαὶ among the Athenians from first to last, we would wish to direct the attention of the reader to the following point; viz. That there was a certain order among these Tribes, an order of Dignity or Precedence, which appears to have been something invariable[10], i. e. fixed sometime or other once for all. In the Λόγος Ἐπιτάφιος of Demosthenes, (which mentions each of the Tribes in its turn, and alludes to the most remarkable events in the history of each,) this order is the following:

i. Ἐρεχθεῖδαι[10]: ii. Αἰγεῖδαι[11]: iii. Πανδιονίδαι[12]: iv. Λεοντίδαι[13]:
v. Ἀκαμαντίδαι[14]: vi. Οἰνεΐδαι[15]: vii. Κεκροπίδαι[16]:
viii. Ἱπποθοωντίδαι[17]: ix. Αἰαντίδαι[18]:
x. Ἀντιοχίδαι[19].

It is observable that the names of the Ἥρωες Ἐπώνυμοι—after whom the Tribes were called—are enumerated exactly in the same order in the Ety-

[5] Diodorus, xx. 45, 46. cf. xviii. 10. 2: Cephisodorus, B. C. 323: Plutarch, Demetrius, x: Pollux loco citato: Pausanias, i. v. 5: vi. i. 8: Suidas, Πάραλοι: Harpocration, Θυργωνίδαι.

[6] Stephanus Byz. Βερενικιάδαι: cf. Anecdota Græca Parisiensia, iv. 180. 12: Cyrilli Lexicon, Βερενίκιδα. Cf. our Prolegomena ad Harmoniam Evangelicam, Cap. iii. 154. *n.*

[7] Polybius, xvi. 25. § 9: 26. cf. 23. 24: Livy, xxxi. 15 (5), cf. also our Orig. Kal. Italicæ, iii. 82. *n.*; also Polybius, xviii. 24. § 8: Livy, xxxiii. 1, 2: 30: xxxvii. 53: Plutarch, Camillus, xix: Flamininus, vi.

[8] viii. ix. 31.

[9] i. v. 5.

[10] Cf. Corsini, Fasti Attici, Tom. i. Part. i. Dissert. iii. p. 115–151: Diss. iv. 154–185. Tom. iv. Prolegomena, ix xvii.

[10] Oratio lx. § 35. [11] § 36. [12] § 37. [13] § 38. [14] § 39. [15] § 40. [16] § 41. [17] § 42. [18] § 43. [19] § 43.

same with the Primitive, and not yet changed by the substitution of any other in its stead[e]. We have seen no reason

mologicum Magnum[20]; and though they are so neither by Pollux, *loco citato*, nor yet by Pausanias, who enumerates the same names[21], there are several inscriptions in the Corpus Inscriptionum, which confirm the order of Demosthenes[22].

With regard to this order, as it would apply to the additional Tribes; we are told that so long as Antigonus and Demetrius continued to be in favour with the Athenians, Antigonis and Demetrias were placed at the head of all: but after these had changed their names, and when the tribe Adrianis had now been added, Corsini[23] collected from marbles that the proper place of Ptolemais was after Leontis in the above list—consequently fifth; that of Adrianis was next to Acamantis, the seventh; and that of Attalis after Antiochis, last of all. This is the order in which they are enumerated in two Inscriptions; and in both with one exception alike[24].

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i. Erechtheis: ii. Ægeis: iii. Pandionis[25]: iv. Leontis: v. Ptolemais: vi. Acamantis: vii. Adrianis: viii. Œneis: ix. Kecropis: x. Hippothontis: xi. Æantis. xii. Antiochis: xiii. Attalis.

But with regard to the order of the Prytanies, as contradistinguishable to that of the Tribes; testimony, as we have seen, is uniform that it was determined every year by lot. Consequently, it never could have been the same for two years in succession. Very many inscriptions are extant, which confirm testimony, in this respect, by specifying the order of the Prytanies in particular instances, and always differently. For example, Kecropis as the 6th, B. C. 314[26]: Erechtheis as the 2d, B. C. 409[27]: Hippothoöntis as the 3d, B. C. 380[28]: Erechtheis as the 10th, B. C. 369–368[29]: Kecropis as the 1st, B. C. 409[30]: the whole order of B. C. 410, according to the Choiseul Marble[31], i. Æantis, ii. Ægeis, iii. Œneis, iv. Acamantis, v. Kecropis, vi. Leontis, vii. Antiochis, viii. Hippothontis, ix. Erechtheis, x. Pandionis: besides uncertain years, in which we find Antiochis the 11th[32], Æantis the 7th[33], and in some Panathenaic year, (which Mr. B. conjectures to have been B. C. 414–413,) Æantis 3d, Kecropis 4th, Antio-

[e] Cf. our Fasti Catholici, i. 589 sqq.: Introduction to the Tables of the Fasti, Part i. pag. 47: Origines Kalendariæ Italicæ, i. 79, 80.

20 Ἐπώνυμοι.

21 i. v. 2. cf. § 5: vi. 1. 8: x. x. 1: cf. also Schol. in Aristoph. ad Aves, 646 Κριῶθεν: ad Pacem, 1183 πρὸς τὸν ἀνδριάντα: Schol. in Demosth. 176, adv. Leptin. 468. 5 πρόσθεν τῶν ἐπωνύμων: 260, contra Timocratem, 274. 20 πᾶσαν τὴν πόλιν.

22 Cf. ad No. 111: 276: 232: 281.

23 Fasti Attici, i. Pars i. Diss. iv. 13. 176.

24 No. 275: No. 284.

25 This Tribe is wanting in No. 284.

26 No. 105.

27 No. 148.

28 No. 1688.

29 Appendix, Tom. i. 899. 85 c.

30 No. 160: cf. No. 353.

31 No. 147.

32 No. 111.

33 No. 224.

to conclude that the nomenclature of the equable solar year among the Greeks was any exception to this universal rule;

chis 8th[34]. We learn from Thucydides[35] that Acamantis was the *πρυτανεύουσα φυλὴ*, Elaphebolion 14, B. C. 423: Antiochis was so at the trial of the *στρατηγοὶ*, B. C. 406, after Arginussæ[36]: Hippothontis, Boëdromion 16 and 30, B. C. 340[37]: Leontis, Gamelion 25 (B. C. 342[38]): Œneis, Pyanepsion 22 (B. C. 337[39]): Erechtheis, Elaphebolion 26, B. C. 338[40]: Æantis, Skirrhophorion 16, B. C. 338[41]: Pandionis, Hecatombæon 11 and 12, B. C. 354 or 353[42], &c.

When the number of the Tribes was ten, that of the senate was 500: when the former was twelve, the latter was 600. It seems always to have been the rule that there should be 50 *πρυτάνεις* from every Tribe; whatsoever the number of the Tribes. On this principle, when there were thirteen Tribes, the numbers of the senate should have been 650: yet that is a doubtful point. The Βουλὴ or senate *τῶν φ′* (i. e. the 500) often occurs in Inscriptions: and also that *τῶν χ′* or the 600[43]: but it is not so certain that the *βουλὴ τῶν χν′* or 650 does so[44].

Now the number of Tribes having thus been different at different times, and the number of Prytaneæ consequently different also; no one and the same rule could have been applicable to the length of the Prytanies at all times alike. Nothing more however requires to be said of this rule while the Tribes were still only ten. When they became twelve, the most obvious rule would seem to have been that every Prytany should go in and out of office with one of the months, in its turn; and that in the intercalary years, the succession should begin *de novo* in the thirteenth month—probably with the first Prytany over again; or with some one of the whole determined by lot. There is a gloss in the Etymologicum, on *πρυτανεία· ἀριθμὸς ἡμερῶν τριάκοντα* *—which recognises such a rule. Pollux also observes[45], Πρυτανεία δέ ἐστι χρόνος ὃν ἑκάστη φυλὴ πρυτανεύει. καὶ ὅτε μὲν

* This is the reading in Sylburgius' edition. In that of Gaisford indeed it is *ἀριθμὸς ἡμερῶν τριάκοντα ἕξ.*

34 No. 144.

35 iv. 118 (116, 117).

36 Plat. Opp. i. ii. 120. 16. Apologia: cf. ii. i. 59. 15. Gorgias: iii. iii. 512. 15–22. Axiochus: Athenæus, v. 58.

37 Demosthenes, xviii. 132. 127. 92, 93. cf. 90, and 95.

38 Ibid. 104. 99. 108. 112.

39 Ibid. 151. 66–68: Æschines, iii. 27.

40 Ibid. 209.

41 Ibid. 232.

42 xxiv. Contra Timocratem, 31. 46. 47. 29. 82.

43 Cf. No. 361. in the reign of Claudius: No. 381. in the same: No. 415: No. 480. also in the same: No. 313. in his reign or that of Tiberius: No. 320. in that of Claudius.

44 The senate of the *ψν′* (750) occurs No. 380. in a decree in honour of the historian Dexippus; consequently in the first half of the third century. And Mr. B. pronounces the reading of the text in this instance sound. Whether therefore it should be corrected by *φ′* or *χ′* or *χν′* we cannot undertake to say. The Βουλὴ *τῶν φ′* occurs No. 395 and 397, both supposed to have been later than the reign of Marcus Aurelius: and No. 353, of A. D. 198, in the reign of Severus, and 420. 433. 438. Dio Chrys. Or. l. 255. 24. speaks of the 600 still in his own time.

45 viii. ix. 32. 938.

nor consequently that the proper names of the months in any Greek calendar could have been older than the date of the first Correction of the Primitive Calendar among them.

On this principle the names of the months in the lunar calendar of the Athenians could not have been older than the time of Solon. And though we believe this to be an incontrovertible fact, yet forasmuch as it is one which has

δέκα ἦσαν, πλείους ἑκάστῃ φυλῇ αἱ ἡμέραι· ἐπεὶ δὲ δώδεκα ἐγένοντο ἑκάστῃ φυλῇ μηνὸς πρυτανείαν ἔχει. This too recognises the same rule; and yet it is very observable, that though there were thirteen tribes at this time, twelve only served the office of Prytaneis, each for a month in its turn: and that would seem to imply that some one Tribe in Pollux's time furnished no members to the senate, or some one served only *extra ordinem*, and for the thirteenth month, when there was one in the calendar. And yet it may be questioned (as we have already intimated supra [46]) whether the calendar had still a thirteenth month, when Pollux was writing.

Be this as it may, many inscriptions are extant, in which the current day of the month and the current day of the Prytanea are the same: implying that the month and the Prytanea began and ended together:—Ἐπὶ Κλεομάχου ἄρχοντος ἐπὶ τῆς Ἀντιοχίδος ἑνδεκάτης πρυτανείας . . . Θαργηλιῶνος ἑνδεκάτῃ ἑνδεκάτῃ τῆς πρυτανείας [47]: which Mr. B. dates between Ol. cxviii. 2 and cxlv. 1, B.C. 307 and B.C. 200.—Again [48], the 26th of the Prytanea and the 26th of the month—which Mr. B. refers to the same archon—Ἐπὶ ἄρχοντος τοῦ μετὰ Φαναρχίδην, ἐπὶ τῆς . . . δωδεκάτης πρυτανείας . . . Σκιροφοριῶνος ἔνῃ καὶ νέᾳ τριακοστῇ τῆς πρυτανείας [49]. The year is uncertain; but the last day of the month and the last of the Prytanea were then the same. —Ἐπὶ τῆς Λεοντίδος, . . . τῆς πρυτανείας . . . ιῶνος ἕκτῃ καὶ δεκάτῃ ἕκτῃ καὶ δεκάτῃ τῆς πρυτανείας . . . ἐπειδὴ Φιλέταιρος ὁ τοῦ βασιλέως Εὐμένους ἀδελφὸς κ', τ. λ. [50] Consequently in the reign of Eumenes, between Ol. cxlv. 4 and clv. 3, B.C. 197–158, according to Mr. B.—Ἐπὶ Διονυσίου ἄρχοντος τοῦ μετὰ Παράνομον· ἐπὶ τῆς Αἰαντίδος ἑβδόμης πρυτανείας, . . . Γαμηλιῶνος ὀγδόῃ ἱσταμένου ὀγδόῃ τῆς πρυτανείας [51] κ', τ. λ. To these examples of the rule when the number of Tribes was 12, more might be added; but these are sufficient to establish it.

As to the rule in intercalary years, when the number of the months was 13, and that of the Tribes was still 12; it is doubtful, in the absence of precise information about it. In our opinion however it would be more agreeable to the analogy of the common years, under similar circumstances, to give the extra month to the first Prytany over again, or to some one of them determined by lot, than 32 days to each of the Prytanies in years of 384 days, and one less to some one, in those of 383, and one more in those of 385. On this point however every one must judge for himself.

[46] Page 61. *n.*
[47] No. 111. [48] No. 112.
[49] No. 113. [50] No. 122.
[51] No. 124. cf. No. 115.

scarcely been suspected by any of the writers on these subjects before us, and will probably be new to most of our readers, we think it incumbent upon us to consider it somewhat particularly; and without insisting on the analogy of the Primitive Calendar, to state some of the proofs of it, in the case of the Attic lunar calendar in particular, as well as of the Greek lunar calendar in general.

In the first place then, we know the actual names and order of the months in this calendar, from testimony; and, in eight instances out of twelve, the meaning of these names is capable of being ascertained on etymological principles; and in seven it is found to be such as implies a certain relation between the order of the month so called in the calendar, and its place in the natural year. Now it exceeds the bounds of probability that seven such coincidences as these between the name and place of a particular month in the calendar, and its place in the natural year, could have been the effect of accident. It might have been due to a particular concurrence of circumstances, that, when the equable solar year was about to be changed into the fixed lunar year, the months of the former were occupying such and such sites in the natural year; but it could not have been the effect of any combination of circumstances that the names of those months also in nearly two-thirds of the whole should be found to suit those places in the natural year, and none else.

The first day of the Primitive Calendar, Æra cyclica 3415, (which, as we have seen, was the epoch of the lunar correction of Solon,) was falling on Jan. 19 at midnight B. C. 592, at a certain distance from one cardinal point in the natural year before it, the mean winter solstice, Dec. 28, and at a certain distance from another such point after it, the mean vernal equinox, March 29; and in the lunar calendar, which took its rise on this first day of the Primitive Calendar, the names of the months in seven instances at least out of twelve were clearly adapted to this fundamental and primary relation of the civil year for the time being to the natural. If then we do not suppose these names to have been given to the months of the Primitive solar calendar B. C. 592, when the months so called and in this order of succession were falling critically at these points in the natural year; we have no alternative except that of going back to the time when the same months in the same kind of calendar, and in the same order of succession, were falling relatively to the natural year in the same places as B. C. 592. And to find this time we should have to go back to Æra cyclica 1902 B. C. 2104—when the first of the primitive Thoth was falling on Jan. 19, as it was B. C. 592, and the relations of the Primitive solar year to the natural were so far the same as those of Æra cyclica 3415, that the names of the months which, as adapted to those relations, it might have received first, B. C. 592, would have been almost equally suitable to them, B. C. 2104.

In the next place, it is to be considered that, as the equable calendar was common to all the Greeks, if the months in that calendar, before it had yet been superseded by any form of the lunar correction, had proper names, these names must have been common to all the Greeks; and as no change was made in the order of these months, or in the beginning of the year, or even in the nominal reckoning of the calendar, when the first lunar correction was substituted for the Primitive solar year, but every thing in appearance at least went on at first in the new calendar as it had done in the old; it is by all means to be supposed that if the months in the old calendar had names of their own they must have been retained in the new. It was to be expected then *a priori* that how many soever corrections there might be, and how different soever the proper Julian dates of each, and the Julian types or abstract form of each—in the names of the months at least, there would be no difference among them. The nomenclature of these various corrections, if nothing else, would be the same; and in each case only the reflection and continuation of what it had always been in the old solar calendar.

Now this expectation turns out on inquiry to be decidedly contrary to the matter of fact. Among all the distinctions which our researches bring to light, as characteristic of the various lunar corrections of the Greeks, while none is more extraordinary, and at first sight more unaccountable, none is more certain, than the great variety in the names of their months respectively. And yet this variety may be explained, if we suppose that when each particular community adopted its own lunar correction, it gave names to the months of the civil calendar for the first time, and names of its own selection: but on any other hypothesis this *one* phenomenon in the history of the ancient Hellenic calendar, and of its various changes, which in point of fact is the most unquestionable, with respect to its cause or principle will be the most unintelligible and inexplicable, of all.

We can form at present only a very imperfect idea of the extent to which this principle of distinction must have pervaded the calendars of later times; because though we have been made aware of the names of more or fewer of the months in many of them, we know them all only in four, the Attic, the Macedonian, the Delphian, and the Rhodian, and nearly all, only in one or two more. Among these the classical historians and the other classical writers, as often as they have occasion to refer to any contemporary calendar, are commonly found making use of one or other of the first two; and yet in neither of those was there a month of the same name as any one in the other, though both were derived from the Primitive Calendar, and both under similar circumstances.

Indeed in applying the name of variety to this principle of distinction and its practical operation, we considerably underrate the truth; for mere variety would imply agreement in some respects as well as disagreement in others—whereas the actual difference between one lunar calendar of the Greeks and another, so far as the names of the months were concerned, in a majority of instances, was total and complete: and though calendars were almost as numerous among them as πόλεις (distinct and independent communities), none of them, so far as we have discovered, had the same names at first, or before the original calendar of each particular community had been affected by the course of events, and by changes of various kinds in their public and social relations.

It cannot however be expected that we should enter on the proof of these statements at present. Particular proofs of them will appear in due time. It was, no doubt, the notoriety of this distinction in the reckoning of the Civil calendar, and of the extent to which it prevailed, which gave occasion to a work of Callimachus', mentioned by Suidas[f] under the title of Μηνῶν προσηγορίαι κατὰ ἔθνος καὶ πόλεις, and therefore containing an account of the nomenclature or style of the calendars among the ἔθνη as well as among the πόλεις of his time. The latter of these are probably to be understood of the calendars of the Greeks; the former of the calendars of those who were not Greeks: *these* too in all probability solar calendars of their kind, the *others* lunar; both of them however, we have no doubt, either still the Primitive civil calendar in its integrity, or some kind of solar or lunar corrections derived from it. The description thus given by Suidas of this lost work would apply to the collection which has actually come down, under the name of the Florentine Hemerologium, and contains calendars of both sorts, κατὰ ἔθνος and κατὰ πόλεις: only that this is a much more partial and incomplete enumeration of its kind than Callimachus' probably was; and in point of date, as we hope to show hereafter, was many centuries later. In this collection however, as far as it goes, we see the same variety in the names of the months; though the names themselves in repeated instances prove that they could not have been older than the times of the Syro-Macedonian kings, or of the Roman emperors; and therefore that the calendars in which they occur, modified as they must have been in these respects out of compliment to the ruling powers, cannot be regarded in their present state as genuine monuments of their kind, and as authentic indications of their proper style and nomenclature at first.

In the third place, though the general rule of proceeding in these corrections of the ancient Greeks, appears to have been that when they adopted a fixed lunar year, instead of the old equable solar year, they gave proper names also to the months for the first time; yet it is evidently possible that there might have been cases of exception to this rule; that amidst the almost endless variety of corrections thus derived from the same Primitive Calendar, some might retain the style of the old solar calendar for the new lunar

[f] In nomine.

one also, and distinguish the months in this by their numerical order of succession, as they had done in that. And this supposition too, (which every one must allow to be *a priori* a probable one,) turns out to be matter of fact. A lunar correction of the primitive solar year, reducible under the fifth Type of the Hellenic Octaëteris in general, and the national calendar of Phocis, is actually recoverable; and will be explained, we hope, and substantiated by the necessary proofs hereafter. The months in this were discriminated asunder by names of number and order, not by proper names, strictly so called. It is also to be observed on this subject, that as the old rule among the Greeks, before their first lunar correction of the primitive solar year, was to distinguish the months by their numerical order only; so when the lunar calendar itself gave way to the solar again, in the form of the Julian, some of them are known to have reverted to the old rule; and laying aside the proper names which the months had borne while the calendar was still lunar, to have given them names of number and order, first, second, third, and the like, as at first[g].

Lastly, testimony is extant which, if we are not mistaken, proves that the months among the Greeks, at a point of time more remote than the date of their first Lunar Correction, were actually called after their order in the calendar. Plutarch has given an account of an exploit attributed to Telesilla, a celebrated poetess and minstrel of Argos, contemporary with Cleomenes, king of Sparta; the particular consideration of which we reserve for the Argive calendar. The remembrance of the event was kept up at Argos by an annual festival called the Ὑβριστικά: the date of which, as the text of Plutarch stands at present, he tells us was attached to the first Τοῦ νῦν μὲν τετάρτου πάλαι δὲ Ἑρμαίου κατ' Ἀργείους[h], i. e. the first of the month, which in his time was called the fourth, but anciently was called Hermæus. But Polyænus also has given an account of the same exploit, and of the memorial of it ever after kept up at Argos, according to which it was still commemorated on the first of Hermæus: Τοῦτο τὸ στρατήγημα τῶν γυναικῶν μέχρι νῦν Ἀργεῖοι τιμῶσι

g Cf. Corsini, F. Attici, part i. tom. ii. 465: Dissert. xiv. 23.
h De Virtutibus Mulierum, iv. Ἀργεῖαι.

νουμηνίᾳ μηνὸς Ἑρμαίου[k] *κ', τ. λ.* And as Polyænus was writing A. D. 163 or 164, and Plutarch was living as late as A. D. 125 at least, if it was still celebrated on the first of Hermæus in Polyænus' time, it could scarcely have been otherwise in that of Plutarch. In Plutarch's own statement of the date therefore, as his text stands at present, we must suppose that these two words, *τετάρτου* and *Ἑρμαίου,* have got one into the place of the other; and that the text ought to be read, Τοῦ *νῦν μὲν* Ἑ*ρμαίου πάλαι δὲ τετάρτου λεγομένου*: from which it will follow, that the months in the Argive calendar had names of order and number before they had proper names of any other kind. If then when this incident happened, there was a month in their calendar which had a proper name, these names sometime or other before that event must have been changed. And as it will be shewn hereafter, that the date of this event was forty years at least later than the first lunar correction at Argos, nothing can be more probable than that the time, when the names of the months were actually changed, was that of this first correction *.

* We know of no objection to these conclusions which has not been already anticipated, or may not be easily answered. It does not appear that any of the months in the civil calendar had a proper name in the time of Homer. He has characterised the first and the last month of that of his own time by notes and relations of various kinds, which can leave no doubt of what they were intended, and what places those months must have been occupying, both in the natural year and in the civil calendar, at the time. But he specifies no month by name. The name of a month occurs in Hesiod; which we cannot find in the Attic calendar at any time, and the ancients could not find in the Bœotian calendar of their time: and which in fact is discoverable, at present, only in the Ionic calendar of Asia Minor, or in the Neapolitan calendar in Italy. But neither is this any objection; if Hesiod, as we hope to see hereafter, was a contemporary of Solon's, and the date of his Works and Days was several years later than the correction of Solon.

The truth is, that no authentic allusion to any month in the ancient Greek calendar, under a proper name, and going back to an æra and an epoch, anterior to that of the earliest of their lunar corrections, is any where discoverable at present, except one, to a month which Plutarch tells us, in the time of Theseus, was called Cronius, and in other respects agreed to the Attic month Hecatombæon of later times: and the explanation which is to be given of that name must be reserved at present.

[k] viii. 33.

SECTION II.—*Names and Order of the months in the Calendar of Solon.*

The names of the months in the Calendar of the Athenians have never been the subject of controversy; but the order of the months so called has been warmly debated in modern times: though after all that has been written on this question, it may now be considered decided and set at rest. It makes no difference, that the subject of this controversy was professedly the order of the months in the calendar of Meton, and not in that of Solon; because though the numerical order of the months in the latter was not the same as that in the former, the relations of the months *inter se*, and their places in the natural or the Julian year, were just the same in both. Gamelion was preceded by Posideon, and followed by Anthesterion, in both; Hecatombæon followed Skirrhophorion, and Metageitnion Hecatombæon in both. If proof then of the order and place of these months in particular instances is still required, the proper time for its production would seem to be, when the correction of Meton comes under consideration. At present we will assume, that in the correction of Solon, and in the lunar calendar of the Athenians from the first, both the names and the order of the months were as follows.

Names and Order of the months in the Calendar of Solon.

i. Γαμηλιών.	Gamelion.	vii. Ἑκατομβαιών.	Hecatombæon.
ii. Ἀνθεστηριών.	Anthesterion.	viii. Μεταγειτνιών.	Metageitnion.
iii. Ἐλαφηβολιών.	Elaphebolion.	ix. Βοηδρομιών.	Boëdromion.
iv. Μουνυχιών.	Munychion.	x. Πυανεψιών.	Pyanepsion.
v. Θαργηλιών.	Thargelion.	xi. Μαιμακτηριών.	Mæmacterion.
vi. Σκιρροφοριών.	Skirrhophorion.	xii. Ποσειδεών.	Posideon.
		xiii. Ποσειδεών Β′.	Posideon B.

SECTION III.—*Explanation of the Names of the months in the Calendar of Solon.*

i. Name of the month Γαμηλιών.

The explanation of this name is almost self-evident. The name itself must have been ultimately derived from Γάμος: and the name so derived must have denoted the "marrying month," the month "devoted to marriage." But the true explanation of the name is a certain custom of public and private life, not more peculiar to the ancient Greeks than to the rest of the ancient world,—that of celebrating marriages on a large scale in the first month of the year; a custom which we consider sufficiently interesting in itself, and important to our own business in the present work, to be made the subject of a Dissertation of its own. The fact of this custom being well established among the Greeks of old, every one must see that though there may be no reference in this name of one of the months in the calendar of Solon to its place in the order of the seasons, there is a very significant one to its place in the order of the calendar, as the first month of the year, and at the head of all the rest: in which capacity, and which only, could it have answered to the description, and occupied the place, of the *Γαμηλιὼν* of primitive times, the marrying month of Hellenic antiquity.

ii. Name of the month *Ἀνθεστηριών.*

The learned Theodore Gaza, treating of the site of the Attic months in the natural year, came to a singular conclusion respecting this month in particular; as if the etymon of the name was *παρὰ τὸ στέρεσθαι τῶν ἄνθεων*, from the absence of flowers in that month: and in his scheme of these months he assigns it the place which was properly due to November in the Julian calendar[1] *. It is strange that it did not occur to him to reflect that in every climate of the world, and especially in that of Attica, none of the autumnal months could have been designated by such a character as that. It is certain that *ἀνθοστερεῖν* or *ἀνθορρνεῖν* does not occur in

* Under the same impression of the site of this month in the natural year, he takes Philostratus to task, for asserting what appeared to him to be little better than an impossibility; viz. that the Athenians were accustomed to crown their children, when they were three years old, in this month Anthesterion, with chaplets of flowers. Philostratus did say this, in his Heroica, 694 A–B; and no doubt with regard to such a custom as still kept up in his own time said it with truth: though in his Heroica he would have it be supposed the same thing was done, and in the same month, even in the time of Ajax, Protesilaus, and the Trojan war.

[1] Cap. v. Uranologium, 288 B.

Greek for the withering away or decaying of flowers, as φυλλορροεῖν or φυλλοβολεῖν does for the fall of the leaf.

There can be no doubt however, that in supposing either στερεῖν or στέρεσθαι to enter into the composition of this name, Gaza must have been mistaken. The names of the months in the Attic calendar, with one exception only (that of the month Poseideon), were all formed from adjectives in ιος, by changing the termination ιος into ιών· Γαμηλιὼν from Γαμήλιος, Ἀνθεστηριὼν from Ἀνθεστήριος—and the like. And with respect to such an adjective as this of ἀνθεστήριος, it is formed according to the same analogy as many others, which end in τήριος also, and are derived from substantives ending in τήρ: Μαιμακτήριος from μαιμακτὴρ, λυμαντήριος from λυμαντὴρ, δραστήριος from δραστὴρ, φυλακτήριος from φυλακτὴρ, δηλητήριος from δηλητὴρ, αἰσχυντήριος from αἰσχυντὴρ, and the like. And as μαιμακτὴρ is derived from the third person singular of the perfect passive of μαιμάσσω—λυμαντὴρ from the third person singular of that of λυμαίνω—φυλακτὴρ from the third person singular of that of φυλάσσω—αἰσχυντὴρ from the third person singular of that of αἰσχύνω, so would ἀνθεστὴρ be from the third person singular of ἤνθεσμαι, the perfect passive of ἀνθεῖν. And though ἀνθέω is properly a verb neuter in Greek, and in the classical use of the word does not occur as a verb active, in the sense of "to make to flower," yet a perfect passive is conceivable in theory even of a neuter verb like ἀνθέω—and in point of fact it must be supposed in this instance, to account for the derivation of this name of Ἀνθεστηριὼν from ἀνθεστήριος, and through that from ἀνθεστήρ; which, on grammatical principles, cannot be otherwise explained. And, as the best lexicons show, even the active or transitive sense of this verb, "to make to flower," though rare in Greek, and in our best and earliest authorities perhaps unexampled, occurs in the later writers.

The etymon of this name of Ἀνθεστηριὼν, thus derivable first from ἀνθεστήριος, and secondly from ἀνθεστὴρ and ἤνθεσται, appears in Ἀνθεστήρια, one of the names of the Διονύσια among the Athenians; and in Ἀνθεστηριάδες, a common name among the Rhodians for unmarried, but marriageable, young women: Τὰς ἐχούσας ὥραν γάμου, μηδέπω δὲ γεγαμημένας[m].

[m] Anecdota Græca, 215. 16. Cf. Hesychius, in voce.

The etymology therefore of this month *virtute termini* points to its site in the natural year, as that of the "Flowering month," the month in which the flowers began to reappear. No one requires to be told, that the first appearance of flowers, in every climate of the world, is a phenomenon of the spring, and in such a climate as that of Attica, of the early spring.

Ἦλθον ἔπειθ' ὅσα φύλλα καὶ ἄνθεα γίγνεται ὥρῃ [n].

Βοτρυδὸν δὲ πέτονται ἐπ' ἄνθεσιν εἰαρινοῖσι [o].

Μυρίοι, ὅσσα τε φύλλα καὶ ἄνθεα γίγνεται ὥρῃ [p].

Ἀμφὶ δὲ τήν γε
ὧραι καλλίκομοι στέφον ἄνθεσιν εἰαρινοῖσιν [q].

Ὡραῖος καὶ Ἔρως ἐπιτέλλεται ἡνίκα περ γῆ
ἄνθεσιν εἰαρινοῖς θάλλει ἀεξομένη [r].

Νῦν ὥστε φοινικανθέμου ἦρος ἀκμᾷ [s], *κ', τ. λ.*

Ἡμεῖς οἷά τε φύλλα φύει πολυάνθεμος ὥρη
ἦρος, ὅτ' ἆψ αὐγῇ αὔξεται ἠελίου,
τοῖς ἴκελοι [t] *κ', τ. λ.*

Ἀλλ' ὁπότ' ἀνθεμόεσσαι ἐπὶ χθονὸς εἴαρος ὧραι
πορφυρέον γελάσωσιν, ἀναπνεύσῃ δὲ θάλασσα
χείματος εὐδιόωσα, γαληναίη τε γένηται [v], *κ', τ. λ.*

Ἐχθρὸν ἔαρ δὲ κύνεσσι φίλον δὲ πέλει μετόπωρον,
εἴαρι γὰρ βοτάνῃσιν ἅδην ποιητρόφος αἶα
ἄνθεσι πληθύει τε πολυπνόος, ἀμφὶ δὲ πάντῃ
εὐστέφανοι λειμῶνες ἀνήροτα πορφύρουσι [x].

Αὐτὰρ ἐπὴν ἔαρος πρῶται γελάσωσιν ὀπωπαὶ,
ἄνθεά τ' ἐν λειμῶσι νέον γε μὲν ἡβήσειαν [y], *κ', τ. λ.*

Ὡς δ' ὅτε παρθενικὴ γλαγόεντος ἐν εἴαρος ὥρῃ
ἀβλαύτοισι πόδεσσιν ἀν' οὔρεα πάντ' ἀλάληται,
ἄνθεα διζομένη, τὸ δέ οἱ μάλα τηλόθ' ἐούσῃ
νηδύμιον προπάροιθεν ἴον μήνυσεν ἀϋτμή [z], *κ', τ. λ.*

Sic tibi nec *vernum nascentia frigus* adurat
Poma, nec excutiant rapidi *florentia* venti [a].

[n] Od. I. 51.
[o] Il. B. 89.
[p] Ib. 468.
[q] Hes. Opp. et Dies, 74. Cf. Theogonia, 279.
[r] Theognis, 1275.
[s] Pindar, Pythia, iv. 114.
[t] Mimnermus, ii.
[v] Oppian, Halieutica, i. 458.
[x] Kynegetica, i. 458. Cf. ii. 34.
[y] ii. 580.
[z] Ibid. iv. 368.
[a] Ovid. Metam. xiv. 763.

Annus ab exortu cum floriferum reserat *ver*,
Cuncta vigent; nemus omne viret; rubet auricomum rus;
Et fusura umbras radiatas exigitur stirps:
Non denso ad terram lapsu glomerata fluit nix;
Februa spirat odor, Libani ceu montis honor thus[b].

Ἄνθεά τ' εὐώδη λασίαις φίλα ἔργα μελίσσαις,
ὅσσ' ἔαρος λήγοντος ἐπιβρύει ἂν λειμῶνας[c].

Χαιρήμων . . ὁ τὸν κισσὸν χορῶν εἰπὼν ἐραστὴν, κοινῶς μὲν τὰ ἄνθη ἔαρος τέκνα ἐκάλεσεν, ἰδίως δὲ τὰ ῥόδα ὀξυφεγγῆ καὶ ἔαρος τιθηνήματα[d]—*Τῶν δ' ἀνθῶν τὸ μὲν πρῶτον ἐκφαίνεται τὸ λευκόϊον· ὅπου μὲν ὁ ἀὴρ μαλακώτερος, εὐθὺς τοῦ χειμῶνος . . ἐνιαχοῦ τοῦ ἦρος*[e]—*Ὑπαρχομένου δὲ τοῦ ἦρος, καὶ τοῦ μὲν ἀέρος φαιδροῦ γενομένου, τῶν δὲ φυτῶν θάλλειν ἀρχομένων, καὶ τῶν λειμώνων τὰ σύντροφα κομώντων, γαληνά τε τὰ τοῦ πελάγους καὶ ὑπεύδια, αἰσθόμενοι οἱ ἰχθύες ἀναθέουσι*[f], *κ', τ. λ.**

To mention however some specific testimonies on this point. The grammarians of antiquity explain the name of this month through its connection with the natural season of flowers: *Ἴστρος δὲ ἐν τοῖς τῆς συναγωγῆς κεκλῆσθαί φησιν αὐτὸν διὰ τὸ πλεῖστα τῶν ἐκ γῆς ἀνθεῖν τότε*[g]—*Ἀνθεστηριὼν ὄγδοος μὴν ἐστι παρὰ Ἀθηναίοις, ἱερὸς Διονύσου. κεκλῆσθαι δὲ αὐτὸν οὕτω διὰ τὸ τὴν ἄνθην τοῦ βότρυος τούτῳ μάλιστα τῷ μηνὶ γίνεσθαι*†, *καὶ διὰ τὸ πλεῖστα τῶν ἐκ γῆς ἀνθεῖν τότε*[h]—*Ἀνθεστήρια, τὰ Διονύσια· οὕτω γὰρ Ἀθηναῖοι τὴν ἑορτὴν λέ-*

* And hence the names of certain feasts in some of the Greek calendars of the time, compounded of *ἔαρ* and *ἄνθος*; Hesychius, *Ἡροσάνθεια· ἀνθολογία· ἑορτὴ γυναικεία λαμπρὰ, ἀγομένη ἐν Πελοποννήσῳ κατὰ τὸ ἔαρ*: Phot. Lex. *Ἡροάνθια· ἑορτὴ γυναικεία, ὅτε τὸ ἔαρ ἀνθεῖ.*

† This explanation supposes a connection between this month and the time of the flowering of the vine. Cf. Galen, Opp. xii. 186, 187. Simplicium Medicam. ix. 4—who tells us the name of *σκνῖπες* was given by the *ἀμπελουργοὶ* of Asia Minor to a species of worm, wont to be produced in the vine, *τοῦ ἦρος εἰσβάλλοντος, ἡνίκα βλαστάνουσιν αἱ ἄμπελοι.*

b Ausonius, Edyll. 346. De vere primo.

c Theocritus, Idyll. xxii. 42.

d Eustathius ad Od. K. 277. 397. 57. Cf. Athenæus, xiii. 88: *Ἐν δὲ τῇ Ἰοῖ ἔαρος τέκνα προσηγόρευε τὰ ἄνθη,*
Ἀνθηροῦ τέκνα ἔαρος περὶξ στρώσαντες.

e Theophrastus, Histor. Plant. vi. 8, 1.

f Ælian, De Nat. Anim. ix. 57. Cf. 63.

g Harpocration, in voce.

h Anecdota Græca, 403, 32. Cf. Suidas, in voce.

γουσι· καὶ Ἀνθεστηριῶνα τὸν μῆνα καθ' ὃν ταῦτα ἐτελεῖτο· ἐπειδὴ ἡ γῆ τότε ἄρχεται τοῦ ἀνθεῖν [i].

Most of the calendars of antiquity, whether lunar or solar, provided they were fixed, and preserved the same relation to the natural year perpetually, had some month, which took its name from the first plain symptoms of returning spring; the expansion of leaves, or the opening of flowers. Adar was so called in the Jewish calendar, from the profusion of flowers which in that month (corresponding to Anthesterion in the Attic calendar, to February in the Julian) decorated the face of nature in Judæa, with an external robe of magnificence, splendour, and beauty; implied in the etymon and meaning of the name of the month itself. The Roman Aprilis [k] derived its name, not from the Greek Ἀφροδίτη, but from the reopening or relaxation of nature in that month, quasi *Aperilis.* In the Alexandrine calendar, the limits of Pharmuthi, the 8th month, were March 27 and April 26 [l]; yet Pharmuthi was the rose month—the month in which roses bloomed in Egypt [m]. Ardebehisht was the rose month in the Persian calendar, as fixed by the correction of the sultan Gelalo'din; and Ardebehisht in that correction could never be more than 30 days later than the vernal equinox. The climate of Attica was as forward as that of Persia; and if the rose (one of the latest of the flowers of spring in our own climate) was in full bloom in Persia in April, it must have begun to bloom in Greece in February or March: and we hope to show on a future occasion that full-blown roses might be found in Greece by the vernal equinox [mm]. Other flowers, which even in our own climate, are much forwarder than the rose, for the climate of Greece would be proportionably earlier than the vernal equinox itself. The earliest limits of the Anthesterion of Solon were Dec. 28–Jan. 26; the latest, Feb. 21–March 23: the proper or normal, Feb. 17–Mar. 19. The Flatus Favonii, or Ζεφύρου πνοὴ, the beginning of the early spring—the middle point between the winter solstice [n] in Solon's time, (the true Dec. 27, the mean Dec. 28,) and the

[i] Etym. M. in voce.

[k] Cf. our Origines Kal. Italicæ, i. 92, 93. 161. 284.

[l] Cf. our Fasti Catholici, iv. 477.

[m] Anthologia, iii. 211.

[mm] Cf. Theophrastus, Hist. Plant. vi. 8, 2.

[n] Cf. our Origines Kal. Ital. i. 283: iv. 180. *n.*

vernal equinox, (the true March 27, the mean March 29,) could not fall later than the tenth or eleventh of this month. The *Λήναια* (*Διονύσια ἐν Λίμναις*), notoriously a festival of the early spring, were fixed to the 11th–13th of this month. The Hirundinis adventus (another well known token with the ancients of returning spring) always fell out in this month: and Hesiod connects this coming with the sprouting of the vine, or rather with the proper time for pruning the young sprouts, which made their appearance in this month[o].

> *Τόνδε μέτ' ὀρθρογόη Πανδιονὶς ὦρτο χελιδὼν*
> *ἐς φάος ἀνθρώποις, ἔαρος νέον ἱσταμένοιο·*
> *τὴν φθάμενος οἴνας περιτάμνεμεν, ὣς γὰρ ἄμεινον.*

On which Proclus: *Οἰνάδας γὰρ καλοῦσι τὰς ἀμπέλους ἤδη φαινομένου ἔαρος, μεθ' ἑσπερίην ἀνατολὴν Ἀρκτούρου καὶ χελιδόνος ἔκφασιν.* On every account then this month must have been considered the first of the *μῆνες ἠρινοί*: and might well receive a name, declaratory of its connection with that season in general, and with the first symptoms of returning spring, (the opening of buds and flowers,) in particular.

iii. Name of the month Ἐλαφηβολιών.

No explanation of this name is extant, which would throw any light on the seat of the month in the natural year: yet, as it was certainly the next to Anthesterion, if Anthesterion was the first of the spring months, this must have been the second. Its earliest limits in the calendar of Solon were Feb. 25—March 26; its latest, March 23—April 21; its proper, March 19—April 17: so that the vernal equinox, (whether the mean or the true,) in the time of Solon, and as long after as his calendar was still in use, must have fallen out in this month: and as Geminus observes[p], (*ἐαρινὴ μὲν οὖν ἰσημερία γίνεται περὶ τὴν τῶν ἀνθέων ἀκμὴν,*) the vernal equinox being the time when flowers for the climate of Greece were in their perfection, the flowering season for that climate, in the time of Solon, would begin in the first of the spring months, attain to its acme in the second, and decline and approach to an end in the third.

The name of this month however, on etymological and

[o] Opera et Dies, 566. [p] Cap. i. Uranologium, 2. D.

grammatical principles, could have been derived from nothing but ἐλαφηβόλος. Ἐλαφηβόλος was one of the commonest epithets of Ἄρτεμις among the Greeks. Κυνηγετὶν δ' αὐτὴν καὶ θηροκτόνον καὶ ἐλαφηβόλον καὶ ὀρεσίφοιτον παρεισάγουσι [q]—

> Ἐν Δήλῳ ποτ' ἔτικτε τέκνα Λατὼ
> Φοῖβον χρυσοκόμαν ἄνακτ' Ἀπολλῶν',
> ἐλαφηβόλον τ' ἀγροτέραν
> Ἄρτεμιν, ἃ γυναικῶν μέγ' ἔχει κράτος [r].

> Γουνοῦμαί σ' ἐλαφηβόλε
> ξάνθη παῖ Διὸς, ἀγρίων
> δέσποιν' Ἄρτεμι θηρῶν [s].

> Ἀγροτέρη χθονίη .. ..
> .. .. .. ἐλαφηβόλε σεμνή [t].

Some of the ancients explain the name of this month as so called after this title of Artemis: Ἀθηναῖοι δὲ καὶ μηνὸς ὀνόματι γεραίρουσι τὴν θεόν. ὁ γὰρ δὴ Ἐλαφηβολιὼν τοῦτό ἐστιν [v]. And this explanation derives some countenance from the celebration of the Ἐλαφηβόλια, in honour of Artemis ἐλαφηβόλος, in this month. Others however derive it from the sacrifice of stags (ἔλαφοι) in this month; Ἐκλήθη δὲ ἀπὸ τῶν ἐλάφων, αἵτινες τῷ μηνὶ τούτῳ ἐθύοντο. (though to Artemis ἐλαφηβόλος too.) τῇ ἐλαφηβόλῳ Ἀρτέμιδι [x]. Yet the name itself in any case could have no etymon but that of ἐλαφηβόλος: and ἐλαφηβόλος, as Hesychius explains it [y], is synonymous with κυνηγός· ἀπὸ εἴδους ἑνὸς τῶν κυνηγουμένων. The first instance of the use of the word in such a sense, as the ancients remark, was Iliad, Σ. 319.

> ᾧ ῥά θ' ὑπὸ σκύμνους ἐλαφηβόλος ἁρπάσῃ ἀνήρ.

On which the scholiast: Τοῦτο ἴσως πρῶτον ἠγόρευται· ἀφ' οὗ ἐμεῖνε τὸ ὄνομα. A name so derived could imply nothing more properly than that the month so called was the fittest for the chase, and in particular for hunting the stag. There was a month in the calendar of Elis also, called Ἐλάφιος; consequently from ἔλαφος too [z]—the site of which agreed with

[q] Phurnutus, 34. De Diana. Cf. Artemidorus, Oneirocritica, ii. 35.

[r] Athenæus, xv. 50. Scol. 3.

[s] Anacreon, lx. Cf. Hephæstio, De Metris, περὶ ποιήματος, cap. viii. 6.

[t] Orphica, xxxvi.: Artemis, 9.

[v] Libanius, i. 232. 15. v. Ἄρτεμις.

[x] Anecdota Gr. 249. 7. Cf. the Etym. M. in voce.

[y] In voce. Cf. the Etym. M.

[z] Pausanias, v. xiii. 5: vi. xx. 1.

that of Elaphebolion, in being at or about the vernal equinox. Both these names, in our opinion, intimated the same thing; viz. that the month so called in each instance was the first, devoted to the resumption of the chase, and especially that of the stag, after the winter. There was a month in the Germanic calendar, which took its name from a similar relation to the hunting season, and answered to the Julian February. We may have occasion too hereafter to shew that, as the second or third of the spring months was the time when the hind usually dropped her young, these must have been the fittest also for the hunting of the stag. We infer then that *this* name was given to *this* month, to declare its relation to the hunting season, particularly that of the stag; and yet that it might be sacred to Artemis notwithstanding, and possibly on that very account; as being herself the goddess of the chase. The common fable of later times, respecting the detention of the Grecian fleet at Aulis, as owing to the *μῆνις* of Artemis, would imply thus much; if, according to Sophocles[a], the moving cause was Agamemnon's having killed a stag not long before, and boasted of his skill on that account, as greater than that of Artemis herself: against which Callimachus warns her worshippers—

> *Μηδ' ἐλαφηβολίην μηδ' εὐστοχίην ἐριδαίνειν·*
> *οὐδὲ γὰρ Ἀτρείδης ὀλίγῳ ἐπεκόμπασε μισθῷ* [b].

iv. Name of the month Μουνυχιών.

Neither is any explanation of this name found upon record, which would connect it with some particular phenomenon of the natural year; yet it certainly followed Elaphebolion, and therefore must have been the third and last of the spring months of the calendar. There can be no doubt also, on grammatical principles, about the etymon of the name itself. It must have been derived from Μούνυχος, or Μουνύχιος. Μούνυχος was the name of a λιμὴν of the Peiræus—

> *Μουνύχου δ' ἀκταῖσιν ἐκδήσαντο πλεκτὰς πεισμάτων ἀρχάς* [c]—

[a] Electra, 563 sqq. Cf. Ajax, 178.

[b] Hymn. iii. in Artemin, 262. Cf. Theognis, 11.

> Ἄρτεμι θηροφόνη θύγατερ Διὸς, ἣν Ἀγαμέμνων
> εἵσαθ' ὅτ' ἐς Τροίην ἔπλεε νηυσὶ θοαῖς,
> κ', τ. λ.

[c] Euripides, Hippolytus, 761.

which tradition represented as so called after Μούνυχος, an ancient hero or king of Attica, the son of Pantacles; who first took possession of that quarter, and erected a temple there to Artemis Μουνυχία. *Μουνυχία, τόπος παραθαλάσσιος ἐν τῇ Ἀττικῇ· Ἑλλάνικος δὲ ἐν β′ Ἀτθίδος ὠνομάσθαι φησὶν ἀπὸ Μουνύχου τινὸς βασιλέως, τοῦ Παντακλέους*[d]—*Μουνύχιον, τόπος περὶ τὸν Πειραιᾶ, ἔνθα ἐστὶν ἱερὸν Μουνυχίας Ἀρτέμιδος*[e] . . . *ἐκλήθη δὲ Μουνύχιον, ὥς φησιν ὁ Διόδωρος, παραφέρων τὰ Ἑλλανίκου, λέγων ὡς ὅτι Θρᾶκές ποτε, στρατεύσαντες κατὰ τῶν οἰκούντων τὸν Μινυαῖον Ὀρχομενὸν τὸν τῆς Βοιωτίας, ἐξέβαλλον αὐτοὺς ἐκεῖθεν, οἱ δὲ ἐξαναστάντες ἦλθον εἰς Ἀθήνας, ἐπὶ Μουνύχου βασιλέως· ὁ δὲ ἐπέτρεψεν αὐτοῖς οἰκῆσαι τὸν τόπον τὸν περὶ τὴν Μουνυχίαν· ὅστις ὠνομάσθη παρ᾽ αὐτῶν εἰς τιμὴν τοῦ βασιλέως*[f]. It is certain that *Ἄρτεμις* under the title of *Μουνυχία* had a temple on this spot, and was worshipped there in a particular manner[g]. Hence Callimachus,

> Πότνια Μουνυχίη λιμνοσκόπε χαῖρε Φεραίη[h],

and the Argonautica, ascribed to Orpheus,

> Ἀμφί τε Μουνυχίης Ἑκάτης φρουρῆς τε δράκοντα[i]—
> .. ..
> *ταύρους τ᾽ ἀνδροφάγους οἳ ἀμειδέα θύσθλα φέρουσι*
> *Μουνυχίῃ*[k] *κ᾽, τ. λ.*

The feast of Artemis Munychia was celebrated in this month: *Μουνυχιών . . . ὁ δέκατος μὴν παρ᾽ Ἀθηναίοις οὕτω καλεῖται· ἐν δὲ τούτῳ τῷ μηνὶ Ἀρτέμιδι ἔθυον Μουνυχίᾳ*[l]. It is not surprising then to find the name of this month so represented, as if purposely given it in honour of the Munychian Artemis: *Ἀθηναῖοι δὲ καὶ μηνὸς ὀνόματι γεραίρουσι τὴν θεόν· ὁ γὰρ δὴ Ἐλαφηβολιὼν τοῦτό ἐστιν· ἐν ἑτέρῳ δέ γε μηνὶ* (*Μουνυχιὼν οἶμαι*[m]), *κ᾽, τ. λ.*: and the first imposition of such a name, and for such a reason, as having gone back to the time of Μούνυχος: *Μουνυχιών . . . ὠνομάσθη δὲ ἀπὸ τῆς ἐν Μουνυχίᾳ Ἀρτέμιδος, ἡρῶός τινος καθιερώσαντος αὐτὴν ἐπὶ τῷ τοῦ Πειραιῶς ἀκρωτηρίῳ, ἐν τῷ*

d Harpocration in voce; cf. Phot. and Suidas in voce: Steph. Byz., *Μουνυχία*.

e Cf. Scholia in Clem. Alex., Protrepticon, 42. § 17. Opp. iv. p. 113.

f Ulpian, Schol. in Demosth. p. 103. De Corona, 91. 6. cf. Suidas, *Ἔμβαρός εἰμι*.

g Scholia ad Aves Aristoph. 873 *οὐκέτι Κολαινίς*: Pausanias, i. i. 4.

h Hymnus in Artemin, 259. cf. the scholia in loc.

i 938. k 1079.

l Harpocration in voce: cf. Photii Lexicon, and Suidas, in *Μουνυχιών*.

m Libanius, i. 232. 15. v. Artemis: cf. Harpocration in *ἀρκτεῦσαι*.

μηνὶ τούτῳ [n]. Yet the true explanation would seem to be that, as the Munychia was the oldest port of Athens, a name taken from it was given by Solon to that month in his Calendar, which he considered the fittest for resuming the use of the sea, the month of the *Mare apertum*; the site of which in the natural year would be that of the vernal Equinox. The earliest limits of his Munychion were March 26 and April 25; the latest April 21 and May 21; the normal April 17 and May 17. The V. Equinox then (whether the mean or the true) could never fall later than this month; and in every year of the cycle, but the third, would fall one month before it. And as to the etymon of the name—μούνυχες, as every classical reader is aware, is a standing epithet in Homer for the hoofs of his horses, when the most solid and hard of their kind. And as the Munychion itself was an ἄκρα or ἀκρωτήριον, a natural headland, the name was probably first given to that headland, taken from its characteristics, Prominency, Strength, and Durability; and from the site it was transferred to the month. The name therefore properly denoted the Munychian month, the month in which people made use of the Munychia.

v. Name of the month Θαργηλιών.

Θαργήλια· Ἀπόλλωνος ἑορτὴ, καὶ ὅλος ὁ μὴν ἱερὸς τοῦ θεοῦ. ἐν δὲ τοῖς Θαργηλίοις τὰς ἀπαρχὰς τῶν φαινομένων ποιοῦνται καὶ περικομίζουσι. ταῦτα δὲ Θαργήλιά φασι. καὶ μὴν Θαργηλιών. καὶ τὴν ἱκετηρίαν ἐκάλουν Θάργηλον. καὶ Ἀρχίλοχός φησιν·

*ὡς * φαιε, νῦν ἄγει τὰ Θαργήλια* [o].

καὶ ὁ Θάργηλος χύτρος ἐστὶν ἀνάπλεως σπερμάτων [p]—*Θάργηλος· χύτρα ἱεροῦ ἑψήματος* [q]—*Θαργήλια· ἑορτή ἐστι τὰ Θαργήλια· ἄγεται δὲ Θαργηλιῶνι μηνὶ ὅς ἐστιν ἱερὸς Ἀπόλλωνος* [r]—*Θαργήλια· ἑορτὴ Ἀθήνησιν ὀνομασθεῖσα ἀπὸ τῶν Θαργηλίων· Θαργήλια δέ ἐστι πάντες οἱ ἀπὸ γῆς καρποί* [s]—*Ἄγεται δὲ μηνὶ Θαργηλιῶνι Ἀρτέμιδος καὶ Ἀπόλλωνος· Θαργηλιὼν δὲ ὁ ἑνδέκατος μὴν ὀνομάζεται, ἐπεὶ τότε ὁ ἥλιος πυρώδης ἐστὶ, καὶ ἐν τούτῳ τῷ μηνὶ τὰ τῆς γῆς ἄνθη ἀνεξηραίνετο* [t]. *ἀπὸ τοῦ θέρειν οὖν τὴν γῆν· τὸ δὲ θερμὸν*

[n] Photius in voce.

[o] Cf. Fragm. Anacreontis, xciii. pag. 420.

[p] Hesychius: cf. Photius and Suidas in voce.

[q] Hesychius.

[r] Harpocration.

[s] Anecdota, 263. 23. cf. the Etym. M.

[t] Cf. Anecdota, 263. 27.

θάργηλον ὠνόμασαν[v]—'*Ωνόμασται δὲ, ἐπεὶ ὁ ἥλιος τότε πυρώδης· τὸ δὲ θερμὸν θαργήλιον ὠνομάζετο· τὰ δὲ ἄνθη τότε ἐξηραίνετο*[x]—*Θαργήλια*[y]· *Ἑορτὴ Ἀρτέμιδος καὶ Ἀπόλλωνος, καὶ μὴν Θαργηλιὼν (καὶ) ὁ τῶν σπερμάτων μεστὸς χύτρος ἱεροῦ ἑψήματος. ἥψουν δὲ ἐν αὐτῇ ἀπαρχὰς τῷ θεῷ τῶν πεφηνότων καρπῶν· ὀνομαζόμενον ἀπὸ τοῦ θέρειν τὴν γῆν τὸν αὐτὸν ὄντα τῷ ἡλίῳ* (sc. *τὸν Ἀπόλλωνα*). *ἵσταιτο δὲ ἐν αὐτῇ καὶ χοροὶ καὶ ἀγὼν Θαργήλια*[z]—where Suidas reads *καὶ Ἀγαθῶν Θαργήλια*. Some of these testimonies are corrupt, but their general meaning is sufficiently clear. We may collect from them that in this month the heat of the sun was sensibly overpowering and oppressive; that the flowers of spring were withered away and gone; that the barley harvest was approaching to maturity, and the other fruits of the ground already formed and visible.

Now the earliest limits of this month in the Calendar of Solon were April 25 and May 24, the latest May 21 and June 19; the proper May 17 and June 15: the mere statement of which, for the climate of Attica, is sufficient to justify the preceding descriptions. It was consequently the first of the calendar months of the summer, as Anthesterion was of those of the spring. The *θέρους ἀρχὴ*, a fixed term in the Parapegma of Meton and Euctemon, attached to the Heliacal rising of the Pleiads, May 6, would commonly fall in this month: the beginning of barley harvest, which Hesiod dated with the Heliacal rising of the same constellation, could never fall *out* of this month. The stated sacrifice to Demeter Euchloüs or Chloë was attached to the 6th of this month; and the first loaf made of the new barley flour was called *Θάργηλος* also: *Ὥσπερ καὶ τὸν Θάργηλον (ἄρτον), ὅν τινες καλοῦσι Θαλύσιον. Κράτης δ' ἐν δευτέρᾳ Ἀττικῆς διαλέκτου Θάργηλον καλεῖσθαι (φησὶ) τὸν ἐκ τῆς συγκομιδῆς πρῶτον γινόμενον ἄρτον*[a]. Hence the name of the month, *Θαργηλιὼν*, from *θάργηλος* in the sense of *θερμός*; the *hot* month, the first of the hot months at least. Hence too the *χύτρα ἕψους ἱεροῦ*, and the *ἀπαρχαὶ*, or eucharistic offerings, of the *πεφηνότες καρποὶ*, the productions of the year, already matured and ripe for use, at the *Θαργήλια*. In short, there was no month in the calendar of

[v] Etym. M. cf. in *Φάρμακος*.
[x] Photii Lex.
[y] Cf. Suidas.
[z] Phot. Lex.
[a] Athenæus, iii. 80.

Solon, not even Anthesterion itself, the site of which in the natural year is more clearly indicated by the descriptions and characters which have been left of it, than that of this.

vi. Name of the month *Σκιρροφοριών*.

Σκίρα ἑορτὴ παρ' Ἀθηναίοις, ἀφ' ἧς καὶ ὁ μὴν Σκιροφοριών[b]. *φασὶ δὲ οἱ γράψαντες περί τε ἑορτῶν καὶ μηνῶν Ἀθήνησιν, ὧν ἐστὶ καὶ Λυσιμαχίδης*[c], *ὡς τὸ σκίρον σκιάδιόν ἐστι μέγα, ὑφ' ᾧ φερομένῳ ἐξ ἀκροπόλεως εἴς τινα τόπον καλούμενον Σκίρον*[d] *πορεύονται ἥ τε τῆς Ἀθηνᾶς ἱέρεια καὶ ὁ τοῦ Ποσειδῶνος ἱερεὺς καὶ ὁ τοῦ Ἡλίου. . . . σύμβολον δὲ τοῦτο γίνεται τοῦ δεῖν οἰκοδομεῖν καὶ σκέπας ποιεῖν, ὡς τούτου τοῦ χρόνου ἀρίστου ὄντος πρὸς οἰκοδομίαν. καὶ Ἀθηνᾶν δὲ Σκιράδα τιμῶσιν Ἀθηναῖοι, ἣν Φιλόχορος μὲν ἐν δευτέρῳ Ἀτθίδος ἀπὸ Σκίρου τινὸς Ἐλευσινίου μάντεως κεκλῆσθαι, Πραξίων δὲ ἐν δευτέρῳ Μεγαρικῶν ἀπὸ Σκίρωνος τοῦ συνοικίσαντος Σαλαμῖνα*[e]. *Σκιράδα δὲ Ἀθηνᾶν Θησεὺς ἐποίησεν, ὅτε ἐπανῄει ἀποκτείνας Μινώταυρον*[f]—*Σκιρροφοριὼν ὄνομα μηνὸς παρὰ Ἀθηναίοις. λέγεται δὲ παρὰ τὸ φέρειν σκίραν ἐν αὐτῷ τὸν Θησέα, ἤγουν γύψον. ὁ γὰρ Θησεὺς ἀπερχόμενος μετὰ Μινώταυρον τὴν Ἀθηνᾶν ποιήσας ἀπὸ γύψου ἐβάσταζεν. ἐπεὶ οὖν τῷ μηνὶ τούτῳ ἐποίησε, λέγεται Σκιροφοριών*[g]—*Ἑορτή τις ἀγομένη τῇ Ἀθηνᾷ, ὅτε σκιαδείων ἐφρόντιζον ἐν ἀκμῇ τοῦ καύματος. σκίρα δὲ τὰ σκιάδεια. οἱ δὲ οὐ διὰ τοῦτό φασιν, ἀλλὰ διὰ τὴν ἀπὸ Σκίρων Ἀθηνᾶν, ἣν Θησεὺς ἐποίησεν ὅτε ἐπανῄει ἀποκτείνας τὸν Μινώταυρον*[h], *κ', τ. λ.*

The above testimonies, and especially that of Harpocration, resolve the name of this month into *σκίρα* and *φέρειν* or *φορεῖν*; which every one must admit to be its obvious meaning on etymological and grammatical principles. They give us to understand also that *σκίρον*, the principal element in its composition, was synonymous with *σκιάδιον*; and that is confirmed by the scholia on Homer[i]: *Σκίρον δὲ τὴν ῥίζαν διὰ τὸ*

[b] Cf. the Scholia Aldina in Ecclesiazusas, 18. and Phot. Lex. *σκίρον*: Suidas, *Σκιράδος*.

[c] Cf. the Schol. ad Œdip. Colon. 56.

[d] Cf. Steph. Byz. in *Σκίρος*.

[e] Cf. Hesychius, *Σκειράς· Ἀθηνᾶ*: Etym. in voce: Eustathius ad Dionys. Periegeten, 511, De Salamine; though it is very observable, that what he says here of the island of Salamis, Strabo (ix. i. 236 a) says of that of Ægina: *Ἐκαλεῖτο δὲ ἑτέροις ὀνόμασι τὸ παλαιόν· καὶ γὰρ Σκιρὰς καὶ Κυχρεία, ἀπό τινων ἡρώων, ὧν ἀφ' οὗ μὲν Ἀθηνᾶ τε λέγεται Σκιρὰς καὶ τόπος Σκίρα ἐν τῇ Ἀττικῇ καὶ ἐπισκίρωσις* (corrige *ἐπὶ σκίρῳ ἄροσις*. cf. Steph. Byz. in *Σκίρος*) *ἱεροποιΐα τις, καὶ ὁ μὴν ὁ Σκιροφοριών*.

[f] Harpocration in voce, and Scholia Aldina in Ecclesiaz. 18. cf. Suidas in *Σκίρον*.

[g] Etym. M. in voce: Suidas in *Σκίρος*.

[h] Suidas in *Σκίρος*.

[i] Ad Iliad. Ψ. 331.

ἐσκιάσθαι. ὅθεν τὸ σκιάδιον Ἀττικοὶ σκίρον καλοῦσι: for which reason Aristarchus is said to have read the line with this word σκίρος, instead of that which is read in it at present—

ἠὲ σκίρος ἔην· νῦν δ' αὖ θέτο τέρματ' Ἀχιλλεύς.

Hence Pollux also[k]: Καὶ τὸ σκιάδιον δέ ἐστιν ἐν χρήσει... καὶ σκιὰς, ὑφ' ᾗ ὁ Διόνυσος κάθηται, καὶ σκίρα ἑορτή. This month therefore was in an eminent sense the μὴν σκιροφόρος; and these σκίρα, the carrying of which gave it its name, explained as they are by σκιάδια, could have been nothing but umbrellas or parasols, which the heat of the sun in this month, for the climate of Attica, rendered so indispensable, that the first invention of them was attributed to their tutelary goddess, Athena herself: Σκίρος· ἑορτή τις ἀγομένη τῇ Ἀθηνᾷ, ὅτε σκιαδείων ἐφρόντιζον ἐν ἀκμῇ τοῦ καύματος. σκίρα δὲ τὰ σκιάδια[l]—Σκείρα (corrige Σκίρα) ἑορτὴ ἀγομένη Ἀθηνᾶς, ὅθεν (ὅτε) σκειραδίων (σκιραδίων or σκιαδίων) ἐφρόντιζον, ἐπεὶ ἀρχὴ ἦν τοῦ καύματος[m]—Σκειρὰς (Σκιρὰς) Ἀθηνᾶ... ἡ ἀπὸ τοῦ σκιαδίου· πρώτη γὰρ Ἀθηνᾶ σκιάδιον ἐπενόησε πρὸς ἀποστροφὴν τοῦ ἡλιακοῦ καύματος[n]. These σκίρα, it seems too, were used only, as they would be wanted only, ἐν ἀκμῇ τοῦ καύματος—when the heat of the weather was at its height; that is, at or about the summer solstice. The month then in the Attic calendar, which derived its name from the use of these Σκίρα, (that is, this month of Σκιρροφοριὼν,) must have been the summer solstitial month; and that is explained, as soon as it is known that its earliest limits were May 24 and June 23, the latest June 19 and July 19, the proper or normal June 15 and July 15; and that the date of the mean summer solstice in Solon's time was June 28, and that of the true June 29. There was a feast in this month, which took its name from these Σκίρα, and was distinguished by the carrying of them in state, on the 12th of the month: Σκίρα, ἑορτή ἐστι τῆς Σκιράδος Ἀθηνᾶς Σκιροφοριῶνος ιβ'. οἱ δὲ Δήμητρος καὶ κόρης[nn]. ἐν ᾗ ὁ ἱερεὺς τοῦ Ἐρεχθέως φέρει σκιάδιον λευκὸν, ὁ λέ-

[k] vii. xxiii. 4. 813. 174. Cf. x. xxviii. 1307: also Hesychius, Σκιάς: Photius, Σκιὰς καὶ σκιάδειον: Suidas, Σκιάς.

[l] Photii Lex. in Σκίρος: cf. in Τροπηλίς.

[m] Anecdota, 304. 2.

[n] Ibid. 304. 8: cf Hesychius, Σκειράφιον: also Pollux, ix. vii. 1081. § 96: Hesychius, Σκιάδια.

[nn] Cf. Steph. Byz. in Σκίρος.

γεται σκίρου [o]; i. e. in the first year of the cycle, on the 26th of June, only three days before the solstice. Nothing more then can require to be said in illustration of this etymon, or in explanation of the name of the month *.

* It is not however to be supposed that the use of such parasols or umbrellas as these, for a climate like that of Attica, could have been confined to one month in the year, though that was the solstitial month. The virgins who carried the *κανᾶ* from the city to Eleusis, preparatory to the mysteries, at a much later period of the year, made use of the same kind of covering to protect them from the heat of the sun, even then. *Σκιάδιον· σκέπασμά τι ὅπερ αἱ γυναῖκες (αἱ κανηφόροι) παρὰ τοῖς Ἀθηναίοις ἔχουσι, θεωροῦσαι (εἰς τὰ Ἐλευσίνια), ὑπὲρ τοῦ μὴ καίεσθαι τὰς ὄψεις ὑπὸ τοῦ ἡλίου. ἐκτείνεται δὲ καὶ συστέλλεται πρὸς τὸν κατεπείγοντα καιρόν* [1]—*Τουτὶ ... τὸ σκιάδιον ... ὅπερ ἔχουσιν αἱ κανηφόροι ἀπιοῦσαι εἰς τὰ Ἐλευσίνια, ὑπὲρ τοῦ μὴ καίεσθαι ὑπὸ τοῦ ἡλίου* [2]. Pausanias describes a painting by Nikias, at Tritæa in Achaia, the subject of which was a beautiful young woman, attended by a female servant, carrying one of these parasols over her [3]: and it was one of the duties, imposed by the laws of Athens on the daughters of the *Μέτοικοι*, that they should carry *ὑδρεῖα καὶ σκιάδεια*, for the freeborn women [4]. Nor was the use of these umbrellas peculiar to the Greeks. Martial [5]—

Accipe quæ nimios vincant umbracula soles :
Sit licet et ventus te tua vela tegent.

It is also to be observed that, according to the first of the passages quoted supra, one final end of these ceremonies, which gave name to Skirrhophorion, was to remind people of the fittest season of the year for building. Hesiod recommended midsummer for the same purpose.

Δείκνυε δὲ δμώεσσι θέρευς ἔτι μέσσου ἐόντος,
οὐκ αἰεὶ θέρος ἐσσεῖται, ποιεῖσθε καλιάς [6].

In the Roman calendar, according to Frontinus [7], the usual time for the same purpose was v. Kal. Julias, June 27, midsummer day itself, in the Attic correction of Meton. The ordinary time at Rome for leaving one house and going to another, at least, was the Kalends of July [8].

Before we take our leave of this month, something should perhaps be said of its proper orthography. The rule of antiquity is not uniform in

o Schol. in Eccleziazusas, ad v. 18: cf. ad Thesmophoriazusas, 841: cf. also Athenæus, xi. 92.

1 Scholia ad Equites, 1345: cf. Suidas, *Σκιάδειον*.
2 Ad Aves, 1508: et ad 1550.
3 vii. xxii. 4.
4 Phot. Lex. in *σκαφηφόροι*.
5 Xenia or Apophoreta, xiv. 28.
6 Opera et Dies, 500.
7 De Aquarum ductibus; though, p. 204. § 123, he observes, Idoneum structuræ tempus est a Kalendis Aprilibus in Kalendas Novembres.
8 Cf. Cicero ad Familiares, xiii. 2: ad Quint. Fratr. ii. 3. Suetonius, Tiberius, xxxv. 4, and Martial, xii. 32. 1.
O Juliarum dedecus Kalendarum!
Vidi, Vacerra, sarcinas tuas, vidi.

that respect; sometimes it is *Σκιροφοριὼν*, sometimes *Σκιρροφοριών*. In our opinion, and regard being paid to its etymon, it is more properly to be written *Σκιρροφοριών*; and that is the orthography which we propose to adopt ourselves. In the line quoted above, from Aristarchus, the first syllable in *σκίρος* is long; but in Aristophanes' time, common usage at Athens, we must presume, made it short.

Ὅσα Σκίροις ἔδοξε τοῖς ἐμοῖς φίλοις[9].

Προεδρίαν δ' αὐτῇ δίδοσθαι Στηνίοισι καὶ Σκίροις[10].

And the *ι* in the first syllable being short, yet followed by *ρ*, it would naturally take a double *ρ* after it.

And the first syllable of the name of this month being the first of *σκίρος* and short—that is an insuperable objection to the etymological definition which derives the name from that of a certain wind, peculiar to Attica, which appears to have blown in this month. Sunt etiam quidam peculiares quibusque gentibus venti, says Pliny[11], non ultra certum procedentes tractum, ut Atheniensibus Sciron, paullum ab Argeste deflexus, reliquæ Græciæ ignotus—Atabulus, observes Seneca[12], Apuliam infestat ... Athenas Sciron. This wind was a kind of west wind—a north-west wind—which blew in the summer, (and probably in this month of the summer and the preceding one,) as may be collected from Æschines' account of his voyage from Athens to Delos, and thence to Rhodes, B. C. 330, after the decision of the famous cause De Corona[13]. And though Æschines calls this wind *Σκίρων*, and its name is found written *Σκίρων* in Theophrastus[14], and *Σκίρρων* in Aristotle[15], yet that its proper orthography was *Σκείρων*, is rendered unquestionable by the fact of its deriving its name from the *Σκειρωνίδες πέτραι*, on the road to the Isthmus from Athens by Megara; that being the direction relative to Attica, in which it blew. *Σκείρων· Ἀργέστης λέγεται· δοκεῖ δὲ ἀπὸ τῶν Σκειρωνίδων πετρῶν καταπνεῖν*[16]—*Καθάπερ καὶ τῇ Ἀττικῇ ἀπὸ τῶν Σκειρωνίδων πετρῶν, ἀφ' ὧν καὶ Σκείρωνες καλοῦνται οἱ Ζέφυροι, καὶ μάλιστα οἱ Ἀργέσται*[17]—*Ἀπὸ δὲ τῶν ἄκρων τούτων καταιγίζοντα σκαιὸν τὸν Ἀργέστην Σκείρωνα προσαγορεύουσιν Ἀθηναῖοι*[18]. These rocks themselves derived their name from *Σκείρων*, a freebooter of the time of Theseus, whom Theseus was said to have put to death there[19]: for which reason Sosicrates, a comic poet quoted by Athenæus[20], calls this wind, which blew in the summer from that quarter, the daughter of Skeiron.

Λεπτὴ δὲ κυρτοῖς ἐγγελῶσα κύμασιν
αὔρα κόρη Σκείρωνος ἡσύχῳ ποδὶ
προσῆγε πρᾴως καὶ καλῶς τὸν κάνθαρον.

[9] Eccleziazusæ, 18. cf. 59.
[10] Thesmophoriazusæ, 840.
[11] H. N. ii. 46.
[12] Nat. Quæst. v. xvii. 4: Opp. v. 292.
[13] Epp. i.
[14] De Ventis, ad fin. p. 782: cf. De Caussis, v. 12. 566, 4: H. Pl. iv. 14. 168, 11.
[15] Meteorologica, ii. 6. pag. 56, 28.
[16] Hesychius, in voce.
[17] Strabo, i. 2. 44 a.
[18] Ibid. ix. 1. 232, 233: and Eustathius, ad Il. Φ. 334. 1239. 3.
[19] Diodor. Sic. iv. 59: Plutarch., Theseus, x.
[20] xi. 48.

vii. Name of the month Ἑκατομβαιών.

Ἑκατομβαιών· ὄνομα μηνός· Ὑπερίδης ὁ τοῦ Ἀμφίονός φησιν ἀπὸ τοῦ πλείστας τούτῳ τῷ μηνὶ θύεσθαι ἑκατόμβας κεκλῆσθαι[p]—Ἑκατομβαιών· μὴν Ἀθηναῖος. ἐκλήθη δὲ οὕτως ἀπὸ τοῦ πλείστας ἑκατόμβας θύεσθαι τῷ μηνὶ τούτῳ[q]—Ἐκ δὲ τῆς ἑκατόμβης καὶ μὴν Ἀττικὸς Ἑκατομβαιὼν, διὰ τὰς ὡς εἰκὸς τότε ἐπιφανεῖς ἑκατόμβας[r]. These explanations derive the name from Ἑκατόμβη; but to that etymology there are many objections. i. It assumes a matter of fact, which is questionable; of which at least there is no competent proof from testimony; viz. that more sacrifices, and sacrifices of Hecatombs too, were offered in this month, than in any other in the Attic year. We know of no stated solemnities in this month, requiring particular sacrifices, except the Cronia on the 12th, the Συνοίκια on the 16th, and the Panathenæa majora, once in four years, on the 28th. ii. To derive the name of Ἑκατομβαιὼν from Ἑκατόμβη, as Eustathius himself admits[s], we must suppose the form of the etymon to have been ἑκατόμβα, not ἑκατόμβη; i. e. the Doric, not the Ionic form of this word: and that would be contrary to the analogy of the etymons of the Attic months in every other instance, not one of which can be traced to a Doric, instead of a purely Ionic form. Ἑκατομβαῖος might have been derived from Ἑκατόμβα; and there was a well known festival at Argos called the Ἑκατόμβαια[t], which was probably so derived; called also Ἡραῖα, a name obtained in like manner from Ἥρα, the Doric form of Ἥρη, the name of Juno: but Ἑκατόμβη would have required Ἑκατομβεῖος. Nor can this explanation be justified by supposing the name derived, not from ἑκατόμβη, but from ἑκατὸν and βοῦς; because in words so compounded of a numeral of any kind and βοῦς, the form which the termination assumes is βοῖος, not βαῖος *, and the name of the month so derived must have been Ἑκατομβοιὼν, not Ἑκατομβαιών.

* Ἑκατόμβη . . . ἑκατόμβοιος . . . τουτέστιν ἑκατὸν βοῶν τιμῆς ἄξιος· οἱ γὰρ παλαιοὶ πρὶν ἐπινοηθῆναι τὰ νομίσματα τὰς συναλλαγὰς διὰ τῶν τετραπόδων

p Harpocration, in voce.

q Suidas, in voce.

r Eustathius, ad Od. A. 25. 1386. 51.

s Ad Iliad. Δ. 46. 444. 19.

t Hesychius, Ἑκατόμβαια: cf. Schol. in Pindar. Ol. vii. 152: ix. 132: Nemea, x. Proœm.

In our opinion the real etymon and signification of the name of this month were something very different from those which are thus assigned; and much more appropriate to the time of the year at which it fell. The calendar of Elis and that of Sparta, in all but the names of their months, agreed with that of Solon. One Julian type was common to them all. In the former calendar the month, which answered to this in the latter, was called Apollonius—a name declarative of its own relation to Apollo or the sun; and in the latter, it was called Ἑκατομβεὺς—a name only accidentally different from that of Ἑκατομβαιών. And that this month too in the Spartan calendar must have been sacred to the sun, would be strongly implied by the fact, that one of the principal festivals at Sparta, and much older than the lunar correction of Solon, and originally attached to the season of midsummer, and from the first consecrated to the sun, viz. the

ἐποιοῦντο. ὅθεν ὕστερον ἐφευρεθέντων τῶν νομισμάτων βοῦν ἐξέτυπον ἐν αὐτῷ[1], *κ᾽, τ. λ.*—Ἑκατόμβοιος· *ἑκατὸν βοῶν τιμῆς ἄξιος, ἢ ἑκατὸν χρυσῶν νομισμάτων. οἱ γὰρ ἀρχαῖοι, ὑπερτιμῶντες τὸ ζῶον τὸν βοῦν, διὰ πόλλα μὲν καὶ ὅτι ἱερόν ἐστιν, ἐνεχάραττον τῷ μὲν ἑνὶ μέρει τοῦ νομίσματος βοῦν, τῷ δὲ ἑτέρῳ τὸ τοῦ βασίλεως προσῶπον*[2]—Ἑκατόμβοι᾽· *οἱ γὰρ* Ἀθηναῖοι *ἐν τοῖς ἑαυτῶν νομίσμασι βοῦν ἐνετύπουν*[3]—Ἔκοψε *δὲ καὶ νόμισμα, βοῦν ἐγχαράξας. . . . ἀπ᾽ ἐκείνου δέ φασι τὸ ἑκατόμβοιον καὶ τὸ δεκάβοιον ὀνομασθῆναι*[4]—Ἀντίβοιον, *ἰσόβοιον, ἀντὶ βοὸς καθαγιαζόμενον*[5].

Χρυσεὰ *χαλκείων ἑκατόμβοι᾽, ἐννεαβοίων*[6].

Τὸν *δὲ δυωδεκάβοιον ἐνί σφισι τῖον* Ἀχαιοί.

Πολλὰ *δ᾽ ἐπίστατο ἔργα, τίον δέ ε τεσσαράβοιον*[7].

It strengthens the objection to the name of this month, as imposed by Solon himself, in this form of Ἑκατομβαιὼν, not Ἑκατομβοιὼν, yet as if from *ἑκατὸν* and *βοὺς* notwithstanding; that words so compounded, and following the analogy of such compound words in general, occurred in the laws of Athens, both before and after his time: Καὶ *μὴν κἂν τοῖς* Δράκοντος *νόμοις ἐστιν ἀποτείνειν δεκάβοιον*[8]—Ἐπίβοιον· *ὅταν τις τῇ* Ἀθηνᾷ *ἔθυε βοῦν, ἔθυε τῇ* Πανδώρᾳ *ὄϊν μετὰ βοός· καὶ ἐκαλεῖτο τὸ θῦμα ἐπίβοιον*[9].

1 Etym. Magn. in voce.

2 Schol. ad Iliad. B. 449. cf. ad Φ. 79. Ἑκατόμβοιον.

3 Ad Il. Z. 236.

4 Plutarch, Theseus, xxv: cf. Solon, xxiii.

5 Hesychius, in voce: cf. in *ἐννεάβοιον*.

6 Iliad. Z. 236.

7 Iliad. Ψ. 703: cf. the Anecdota Græca Oxoniensia, ii. 438. 11. Ἐκλογαί. Ἑκατόμβοιος.

8 Pollux, ix. vi. 1029. 61.

9 Suidas, in voce.

Hyakinthia, in its lunar calendar was attached to this month, as we hope to see hereafter.

Now Ἑκατόμβαιος occurs among the other styles and titles of the sun. Ἑκατόμβαιος ὁ Ἀπόλλων παρὰ Ἀθηναίοις[v]: and the first of the elements in the name of the month Ἑκατομβαιὼν, is distinguishable also in other epithets descriptive of Apollo or the sun, and of standing occurrence in classical Greek antiquity, ἑκατὸς, ἑκατηβόλος, ἑκατηβελέτης, ἑκάεργος, and the like—all which the reader will find explained by the Greek grammarians[x], more or less on the same etymological principle, and to the same effect—as intended of the power of the sun to affect with his heat from *a far*, from *a distance*, from *on high*; a power never more truly so described, and never so really and sensibly felt, as at the summer solstice, when the sun is at the greatest distance indeed above, but vertical. The *rapida vis solis* at that season of the year was proverbial among the ancients; and especially among the Greeks: for whose climate, strokes of the sun, (which the ancients described as the arrows of Apollo or Artemis, invisible in their discharge, but fatally sensible in their operation, and killing instantaneously,) at the hottest season of the year, were liable to be of frequent occurrence.

As then Ὑπερίων was a title of the sun at all times and seasons alike, to describe its marching through the air and overhead[y]; so might Ἑκατόμβαιος be another, to describe its course at that one season of the year in particular, when it marches at the greatest distance above, and most directly over the head of every thing on the earth below: that is, the season of midsummer, when it attains every

[v] Hesychius, in voce.

[x] Cf. Hesychius, the Etym. M. Suidas, &c. Eustathius, ad Il. A. 75. 52 14: ad Υ. 73. 1197. 27.

[y] Cf. Scholia ad Il. Θ. 480. Ὑπερίονος· τοῦ ἡλίου, ἤτοι ὅτι Ὑπερίονός ἐστι καὶ Θείας παῖς, ὡς Ἡσίοδος[1].... ἢ ὑπερίων ὁ ὑπεράνω ἡμῶν ἰὼν καὶ περιπολῶν τὸν κόσμον[2] — Ὑπερίονα ... ὁ ἥλιος, ἀπὸ τοῦ ὑπὲρ ἡμᾶς ἰέναι[3]—Ὑπερίονα δὲ νομιστέον αὐτὸν, ὑπεριέμενον ἀεὶ τῆς γῆς, ὥσπερ οἶμαι καὶ Ξενοφάνης ὁ Κολοφώνιός φησιν·

Ἠέλιός θ' ὑπεριέμενος γαῖάν τ' ἐπιθάλπων[4] — Ὑπερίων, καθὸ ὑπεράνω (τινὰ) ἑτέρων (πόρον) πορεύεται[5]—Hyperionem alii patrem solis, alii ipsum, quod eat super terras, ita appellatum putabant[6].

[1] Theogonia, 374. Cf. Pindar, Isthm. v. 1.

[2] Cf. ad Od. A. 8: T. 398.

[3] Hesychius, in voce. Cf. again in Ὑπερίονα: Etym. M. in voce.

[4] Opuscula Mythologica, 470. Heraclides Ponticus, De Allegoriis Homericis.

[5] Ibid. 177. Phurnutus, 17.

[6] Festus, viii. 176. 5.

where to its greatest altitude, and at noon, for every meridian in its turn, shines forth with the greatest force and splendour. Ἕκατος, Hecatus, or the "far one," occurs absolutely for the sun[z]. The name of this month then may most reasonably be derived from ἕκατος, in the sense of ἑκὰς or ἕκαθεν, and βαίνω; not from ἑκατόμβη, or from ἑκατὸν and βοῦς.

And on this principle is it found to be explained by some of the Greek grammarians, if not by all. Ἑκατομβαιών· μὴν ἐστι παρ' Ἀθηναίοις, Κρονίων πρῶτον καλούμενος ἀπὸ τῆς γινομένης τῷ Κρόνῳ θυσίας. ἑκατομβαιὼν δὲ ὠνόμασται διὰ τὰς τοῦ Ἀπόλλωνος θυσίας. θύουσι γὰρ αὐτῷ Ἑκατομβαιῷ, τουτέστι πολυτίμῳ[a]—Ἑκατομβαιὼν ὠνόμασται ἐπειδὴ ἱερός ἐστι τοῦ ἡλίου, ὁ δὲ ἥλιος τούτῳ τῷ μηνὶ μέγαν ποιεῖ τὸν δρόμον. ἐκάλουν δὲ οἱ παλαιοὶ τὸ μέγα ἀπὸ τοῦ ἑκατόν[a]—Ἑκατομβαιών· μὴν τῶν Ἀθηναίων ὁ πρῶτος. ὠνομάσθη δὲ οὕτως ἐπειδὴ ἱερός ἐστι τοῦ Ἀπόλλωνος, ὁ δὲ Ἀπόλλων ἥλιος εἶναι δοκεῖ· ὁ δὲ ἥλιος τούτῳ τῷ μηνὶ μέγαν ποιεῖ τὸν δρόμον. ἐκάλουν δὲ οἱ παλαιοὶ τὸ μέγα ἀπὸ τοῦ ἑκατὸν, ἀφ' οὗ καὶ ἑκατόμβαια[b]. Whether Theodore Gaza had seen these testimonies or not, he rightly inferred from other considerations that this month must have been one of the solstitial months, and sacred to the sun on that account: Ἀλλὰ μὴν καὶ ἑορτὴν Ἀθηναῖοι τότε ἦγον δημοτελῆ. καὶ ἔθυον μεγαλοπρεπῶς τῷ ἡλίῳ ὡς περὶ τροπὰς ὄντι[c]. Its earliest date in the calendar of Solon was June 23; its latest, July 19; its proper or normal one, July 15. Sometimes then it preceded the solstice (June 28 or 29) by a few days—sometimes it followed it—but never at such a distance that the heat of the weather, which attains to its maximum every where not at midsummer, but in the month after midsummer, would not always be greatest in this month. This month therefore must have been considered the tropical or solstitial month, in the Attic calendar, κατ' ἐξοχὴν—dedicated to the sun as yet in the zenith and plenitude of his elevation and influence; characterized by the longest days and the shortest

[z] Cf. Strabo, xiii. 888. 15. Falconeri. Eustath. ad Dionys. Perieg. De Hecatonnesis: ad Iliad. A. 65. 49. 18. Phurnutus, 32. De Apoll. et Artemide: Ἀπόλλων ὁ ἥλιός ἐστιν, Ἄρτεμις δὲ ἡ σελήνη ..... καλοῦνται δὲ ὁ μὲν Ἕκατος ἡ δὲ Ἑκάτη, διὰ τὸ ἕκαθεν δεῦρο ἀφιέναι καὶ ἀποστέλλειν τὸ φῶς.

[a] Etym. M. in voce.

[b] Anecdota, 247. 1.

[c] Cap. v. Uranolog. 285 A.

nights, and by the greatest accumulation of heat in both: and on all these accounts designated by the name of Hecatombæon accordingly.

viii. Name of the month Μεταγειτνιών.

It does not appear that any reference was intended by the name of this month to its place in the natural year; though as having come next to Hecatombæon, it must have been one of the months of summer, and the next but one to the midsummer month itself. And this would be confirmed by its limits in the calendar of Solon; in which its earliest date was July 22, its latest, August 17, its proper or normal one, August 13. But the traditionary explanation of the name supposes it to have been commemorative simply of a matter of fact, of much interest indeed in Athenian history, but connected with such a season as midsummer, if at all, only by that supposed property or character of midsummer, which we had occasion to illustrate in explanation of the name of the month Skirrhophorion—its being the best time of the year for a change of abode.

The collection of the Athenians into one *πόλις* is attributed to Theseus [d]; and that event, we are told, was commemorated ever after by the *Συνοίκια*—or as Plutarch terms it, the *Μετοίκια*. The particular consideration of this fact belongs to the history of the Panathenæa. But the *συνοίκια* were attached to the 16th of Hecatombæon [e]; implying that the *συνοικισμὸς* took place in that month, not in Metageitnion. Harpocration however tells us that Apollo *Μεταγείτνιος* was worshipped in this month: *Ἐν δὲ τούτῳ Ἀπόλλωνι Μεταγειτνίῳ θύουσιν, ὡς Λυσιμαχίδης ἐν τῷ περὶ τῶν Ἀθήνησι μηνῶν* [f]: Photius, that the month was so called, to commemorate this change of abode: *Ὠνομάσθαι δέ φασιν ἀπὸ τῆς μεταβάσεως τῆς εἰς τὸ ἄστυ, ταύτης τῷ μηνὶ τούτῳ γενομένης ὑπὸ Θησέως* [g]. And we learn from Plutarch that as the festival which commemorated this *Μετοικισμὸς* was called the *Μεταγείτνια*—so it was celebrated in this month: *Ἆρα οὖν ξένοι*

[d] Thucydides, ii. 15. Steph. Byz. Ἀθῆναι.

[e] Plutarch, Theseus, xxiv: Scholia in Aristoph. ad Pacem, 1019: cf. ad Plutum, 627: Scholia in Thucyd. ii. 15.

[f] In voce: cf. Suidas.

[g] In voce.

καὶ ἀπόλιδές εἰσιν Ἀθηναῖοι οἱ μεταστάντες ἐκ Μελίτης εἰς Διωμίδα; ὅπου καὶ μῆνα Μεταγειτνιῶνα καὶ θυσίαν ἐπώνυμον ἄγουσι τοῦ μετοικισμοῦ, τὰ Μεταγείτνια, τὴν πρὸς ἑτέρους γειτνίασιν εὐκόλως καὶ ἱλαρῶς ἐκδεχόμενοι[h]. The *Συνοίκια* then and the *Μεταγείτνια* were distinct things in themselves; though both arose out of the same occasion in Attic history. The *Συνοίκια* commemorated the *συνοικισμὸς* and were attached to the date of that event, in the month Hecatombæon; the *Μεταγείτνια* commemorated the change of abode and neighbourhood (the *μεταγειτνίασις*), consequent upon the former, and were attached most probably to the same day in the next month[i]. And hence the name of the month itself; as derivable primarily from *μεταγείτνιος*, and ultimately from *μετὰ* and *γείτων*.

ix. Name of the month Βοηδρομιών.

The traditional explanations of this name too imply no reference in the name itself to any particular season of the natural year. *Βοηδρομιὼν* is derivable from *Βοηδρόμιος*, and *Βοηδρόμιος* from *Βοηδρόμος*, and *Βοηδρόμος* from *Βοὴ* and *δραμεῖν*; and *Βοηδρομεῖν*, according to Suidas and the Etym. M. in voce, was *Μετὰ σπουδῆς παραγίνεσθαι*. The name therefore connected the month so called with some occasion in Athenian history, older than the time of Solon, when help was required, and help in war; and help was received from some quarter or other. And this occasion, according to tradition, went back to the time of the very first war which was known to have been waged in Attica[k]; the war of Erechtheus and Eumolpus. *Βοηδρομιὼν μὴν παρὰ Ἀθηναίοις εἴρηται ὅτι ἐν αὐτῷ ἐτιμᾶτο Βοηδρόμιος Ἀπόλλων· τὴν δὲ ἀρχὴν ἔλαβεν, ὅτι πολέμου συστάντος Ἀθηναίοις καὶ Ἐλευσινίοις, συμμαχήσαντος Ἴωνος κατὰ συγγένειαν ἐνίκησαν Ἀθηναῖοι. ἀπὸ οὖν τῆς τοῦ στρατεύματος βοῆς τῆς ἐπὶ τῷ ἄστει δραμούσης, ὅ τε Ἀπόλλων Βοηδρόμιος ἐκλήθη, καὶ ἡ θυσία καὶ ὁ μήν. καὶ τὰ Βοηδρόμια ἐτελεῖτο ἑορτή*[l]—*Βοηδρομεῖν. ... ἔστι δὲ καὶ ἡ Βοηδρομία ἑορτή τις Ἀθήνησι καλουμένη, καθ' ἣν ἡμέραν ἐβοήθει ὁ Ξοῦθος πολλῇ σπουδῇ πολεμουμένοις Ἀθηναίοις ὑπὸ Εὐμόλπου τοῦ Ποσειδῶνος. Ἐρεχθεὺς δὲ τότε*

[h] De Exsilio, vi.
[i] Cf. the Scholia in Thucyd. ii. 15.
[k] Thucyd. ii. 15.
[l] Etym. M. in voce: cf. in *Βοηδρόμια*.

Ἀθηναίοις ἐβασίλευε[m]—Βοηδρόμια ... ἑορτή τις Ἀθήνησιν οὕτω καλουμένη, ἥν φησι Φιλόχορος ἐν β′ νενομίσθαι ἐπειδὴ Ἴων ὁ Ξούθου ἐβοήθησε σπουδῇ πολεμουμένοις Ἀθηναίοις ὑπὸ Εὐμόλπου τοῦ Ποσειδῶνος, Ἐρεχθέως βασιλεύοντος. Βοηδρομεῖν γὰρ τὸ βοηθεῖν ὠνομάζετο, τουτέστιν ἐπὶ μάχην δραμεῖν[n]. We have only therefore to suppose that tradition had perpetuated the memory of an occurrence of this kind, down to the time of Solon; and that it was known or believed to have happened at the same time of the year as the Βοηδρόμια in this month; and we shall account for the name of the month. The date of the Βοηδρόμια indeed is not certainly known; though there is another reference to it, in Plutarch's life of Theseus[o], which connects it with another memorable event in ancient Attic history, perpetuated by tradition, the battle of Theseus and the Amazons: Ἡ μὲν οὖν μάχη Βοηδρομιῶνος ἐγένετο μηνὸς, ἐφ' ᾗ τὰ Βοηδρόμια μέχρι νῦν Ἀθηναῖοι θύουσι. The historical or traditionary account of this name however may be considered that which connects it with the war of Erechtheus and Eumolpus; concerning which, we reserve any further explanations for the Second Part of this Work. The name of the month is so evidently resolvable into βοὴ and δραμεῖν—and βοηδρομεῖν, or ἐπὶ βοὴν δραμεῖν, is so clearly the classical style and idiom of those early times, for running to the succour, running to the help of some one, running to resist and repel a sudden aggression—that whatsoever may be thought of the tradition itself, that it must have given its name to this month, can scarcely be doubtful.

x. Name of the month Πυανεψιών.

Πυανέψια· ἑορτὴ Ἀθήνησιν. εἴρηται δὲ παρ' ὅσον κυάμων ἐμπίπλανται. καὶ ἄγεται Πυανεψιῶνος ἑβδόμῃ. ἐπειδὴ ἕψουσιν ἔτνος οὕτω (δὲ)* κέκληται ὁ μὴν καὶ ἡ ἑορτὴ, διὰ τὸ ἀθάραν ἕψειν, ἃ καλοῦσι Πύανα[p]—Πυανόψια . . . Ἀπολλώνιος καὶ σχεδὸν πάντες οἱ περὶ τῶν Ἀθήνησιν ἑορτῶν γεγραφότες, Πυανεψιῶνος ἑβδό-

* Corrige Ἐπεὶ δὲ ἕψουσιν ἔτνος οὕτω δὴ κ', τ. λ.

[m] Ibid. Βοηδρομεῖν. Cf. Anecdota Græca Oxoniensia, iv. 269 11. Scholia in Oppian.

[n] Harpocration, Βοηδρόμια. Cf. Suidas, in voce. Aristides, Eleusinia, xix. 422. 6 sqq.

[o] Cap. xxvii. Cf. Æschyl Eumenides, 685.

[p] Hesychius, in voce.

μὴ Πυανέψια Ἀπόλλωνι ἄγεσθαί φασι. δεῖν δέ φασι λέγειν Πυανέψια, καὶ τὸν μῆνα Πυανεψιῶνα· πύανα[q] *γὰρ ἕψουσιν ἐν αὐτοῖς, καὶ ἡ εἰρεσιώνη ἄγεται*[r]—*Πυανεψιὼν . . . μὴν . . ἐν ᾧ καὶ τὰ πύανα ἕψεται εἰς τιμὴν τοῦ Ἀπόλλωνος. πύανα δὲ πάντα τὰ ἀπὸ τῆς γῆς ἐδώδιμα ὀσπριώδη· ἃ συνάγοντες ἕψουσιν ἐν χύτροις ἀθήραν ποιοῦντες*[s]—*Πυανόψια· ἑορτὴ Ἀθήνησιν Ἀπόλλωνος, ὠνομάσθη δὲ διὰ τὸ ἑψόμενον ἔτνος τῶν κυάμων* †. *τὸ γὰρ ἔτνος καὶ τὴν ἀθάραν πύανα καλοῦσιν· ἀφ᾽ οὗ καὶ μήν ἐστι, Πυανεψιὼν λεγόμενος*[t]—*Καὶ πόθεν ἡ τῶν Πυανεψίων ἑορτή;· ἑορτῆς ὄνομα καὶ ἱκετηρία καὶ ὕμνοι πάντων ἐθνῶν πρὸς Ἀπόλλωνα, διὰ τὴν τῆς γῆς εὐετηρίαν, καὶ διὰ τὸ τῇ ὄψει τοὺς καρποὺς φανῆναι*[r]. *κλάδος ἐλαίας καὶ δάφνης πρὸ τῶν οἰκιῶν τιθέμενος, πλήρης πολλῶν ὡραίων ἀναδεδεμένων. τοῦτο δὲ ἐγένετο ἐπὶ τιμῇ τῶν θεῶν, ὥσπερ ἀπαρχὰς λαμβανομένων*[v].

This month therefore took its name from the ceremony of the *Πυανέψια,* described in these quotations. It was the Pyanepsian month, so called *παρὰ τὸ ἕψειν τὰ πύανα.* And as to its site in the natural year; the *Εἰρεσιώνη*, alluded to in some of these descriptions, and the *Ὠσχοφορία*, not yet mentioned in any of them, were constituent parts of the ceremonial of the *Πυανέψια* also.

The *Εἰρεσιώνη* of antiquity is thus described[x]: *Εἰρεσιώνη·*

† This particular mention of the soup made of beans at this feast probably gave occasion to Eustathius' derivation of the name of the month itself from *κύαμος*: *Πυανεψιὼν δὲ ὅτι μηνὸς ὄνομα παρ᾽ Ἀττικοῖς, κυάμων ἑψήσει παρωνομασμένος, . . . οὐ τοῦ νῦν λόγου πλατύνειν.* Cf. Iliad. B. 552. 284. 37. And again, *Ὡς δὲ οἱ κύαμοι καὶ πύαμοι ἐλέγοντο διὰ τοῦ πῖ, ὅθεν καὶ Πυανεψιὼν μὴν, ἀπὸ τῶν τοιούτων κυάμων, δεδήλωται ἀλλαχοῦ*: ad Iliad. N. 589. 948. 28. Cf. ad Il. X. 495. 1283. 6: also Suidas *Εἰρεσιώνη*, 1613 D. Of the use of beans at this feast, see Athenæus, ix. 73. We would not deny that *πύαμοι* and *κύαμοι* might be interchangeable terms in Greek: cf. Hesychius in *Πύαμοι.* But to derive *Πυανεψιὼν* from *πύαμος*, even in the sense of *κύαμος*, would be absurd. It ought on that principle to have been *Πυαμεψιὼν* or *Κυαμεψιών*: not *Πυανεψιών. Πυανοψιὼν* occurs in Inscriptions—but *Πυαμεψιὼν* or *Κυαμεψιὼν* occurs no where: though *Κυανεψιὼν* does, in the calendar of Kyzicus.

q Cf. Hesychius in *Πυάνιον.*

r Harpocration in voce: cf. Photii Lex. in *Πυανόψια*: Suidas in *Πυανεψιὼν*, and *Πυανόψια.*

s Photius in voce.

t Ibid.

v Anecdota, 246. 27. *Εἰρεσιώνη.*

x Suidas, *Εἰρεσιώνη*: cf. Eustathius

θαλλὸς ἐλαίας ἐστεμμένος ἐρίοις, καὶ προσκρεμαμένους ἔχων παντοδαποὺς τῶν ἐκ γῆς καρπῶν. τοῦτον δὲ ἐκφέρει παῖς ἀμφιθαλής, καὶ τίθησι πρὸ τῆς θύρας τοῦ Ἀπόλλωνος ἱεροῦ τοῖς Πυανεψίοις. λέγεται γὰρ Θησέα καθ᾽ ὃν καιρὸν εἰς Κρήτην ἔπλει, προσχόντα Δήλῳ διὰ χειμῶνα, εὔξασθαι τῷ Ἀπόλλωνι καταστέψεσθαι κλάδοις ἐλαίας ὅταν σωθῇ τὸν Μινώταυρον ἀποκτείνας, καὶ θυσιάσειν. καὶ τὴν ἱκετηρίαν ταύτην καταστέψας ἑψῆσαι χύτρας αἰθάλης, καὶ ἔτνος, καὶ βωμὸν ἱδρύσασθαι. διὸ καὶ Πυανέψια δοκεῖ λέγεσθαι οἷον Κυαμέψια· τὸ γὰρ πρότερον τοὺς κυάμους πυάνους ἐκάλουν. ᾖδον δὲ παῖδες οὕτως·

> Εἰρεσιώνη σῦκα φέρει καὶ πίονας ἄρτους,
> καὶ μέλι ἐν κοτύλῃ, καὶ ἔλαιον ἀποψήσασθαι,
> καὶ κύλικ᾽ εὔζωρον (εὐζώροιο) ὅπως μεθύουσα καθεύδῃς.

μετὰ δὲ τὴν ἑορτὴν ἔξω τῶν ἀγρῶν τιθέασι παρ᾽ αὐτὰς τὰς θύρας. Κράτης δὲ ὁ Ἀθηναῖος ἐν τῷ περὶ τῶν Ἀθήνησι θυσιῶν ἀφορίας ποτὲ κατασχούσης τὴν πόλιν θαλλὸν καταστέψαντας ἐρίοις ἱκετηρίαν ἀναθεῖναι τῷ Ἀπόλλωνι[y].

The Ὠσχοφόρια or Ὀσχοφόρια, as it is also written, was so called from the ceremony of carrying Ὦσχοι or Ὄσχοι and depositing them in the temple of Athena Skiras: these Ὦσχοι or Ὄσχοι being branches of the vine, with clusters of grapes, ripe but ungathered, hanging from them. Ὦσχος ὁ μετὰ κλήματος ἀμπέλου (βότρυς)[z]—Ὦσχοι τὰ νέα κλήματα σὺν αὐτοῖς τοῖς βότρυσι[a]—Ὠσχοφόρια, παῖδες εὐγενεῖς ἡβῶντες καταλέγονται οἱ φέροντες τὰς ὤσχας εἰς τὸ τῆς Σκιράδος Ἀθηνᾶς ἱερόν. εἰσὶ δὲ κλήματα ἔχοντα βότρυας[a]—Ὠσχοφόριον τόπος Ἀθήνησι Φαληροῖ, ἔνθα τὸ τῆς Ἀθηνᾶς ἱερόν[a]—Ἑορτή τις ὀσχοφόρια καλουμένη· ὄσχος γὰρ καλεῖται κληματὶς ἐκκειμένους ἔχουσα τοὺς βότρυας. ἣ οὖν (ἣν or ταύτην οὖν) εὐγενὴς παῖς ἔφερεν εἰς τὸ ἱερὸν Σκιράδος[b]—Ὠσχοὶ, τὰ κλήματα, σὺν αὐτοῖς τοῖς βότρυσι. καὶ ὠσχοφόροι οἱ ταῦτα τῇ Σκιράδι Ἀθηνᾷ προσφέροντες ἐν γυναικείοις στολαῖς. καὶ ὠσχοφόριον τόπος Ἀθήνησιν, ἔνθα καὶ τὸ ἱερὸν τῆς Ἀρτέμιδος. καὶ ὠσχοφόρια ὄνομα ἑορτῆς, ἀπὸ τῆς ὤσχης τῆς κληματίδος[c].

ad Iliad. X. 495. 1283 6; from which it appears that what follows was taken by Suidas from Pausanias.

[y] Cf. the Scholia on Aristoph. ad Plutum 1055. ὥσπερ παλαιὰν εἰρεσιώνην: ad Equites, 725. τὴν εἰρεσιώνην μου: Etymol. Magn. Εἰρεσιώνη: Schol. ad Clem. Alex. Protrepticon, p. 9. 33. (Opp. iv. p. 95): also Strom. iv. ii. § 7.

[z] Hesychius in voce: cf. Etym. M. Ὀσχός: Harpocration, Ὀσχοφόροι: Suidas, Ὀσχοφόροι: Hesychius, Ὠσχοφόροι: Phot. Lex. Ὄσχη, Ὀσχοφόροι.

[a] Hesychius: cf. Athenæus, xi. 92.

[b] Photii Lex. Ὀσχοφορεῖν: cf. Anecdota, Ὀσχοφορία.

[c] Etym. M. Ὠσχοί.

Now the institution of both these ceremonies was attributed to Theseus, and at the time of his return from Crete[d]: and this traditional account of their institution is adopted in the Life of Theseus by Plutarch[e]. According to Plutarch, Theseus returned to Athens from Crete on the 7th of Pyanepsion; which was thereby consecrated to the ceremony of the Πυανέψια, the ἕψησις τῶν ὀσπρίων, described as above, the εἰρεσιώνη and the ὀσχοφόρια, described as above also[f]: and all, as he supposes, in fulfilment of a vow of his, made to Apollo before his departure to Crete. But he adds, as the reason of the institution of the ὀσχοφορία in particular, (i. e. the carrying of bunches of grapes hanging from branches of the vine.) that the vintage was going on when he returned and landed in the Phalerus: Ὅτι συγκομιζομένης ὀπώρας ἐπανῆλθον[ff]. If so, on the 7th of Pyanepsion: which thus identifies Pyanepsion with the vintage month for the climate of Attica; a fact of which Gaza makes use in determining its place in the natural year[g].

The season of vintage, according to Hesiod, was indicated by the Heliacal rising of Arcturus; a note of time which we hope to shew hereafter was intended of September 16, eleven days before the date of the mean autumnal Equinox in his time, Sept. 27, and thirteen before the true September 29. The grapes were to be gathered and pressed; and the juice was to be ten days exposed to the sun, and then taken under cover: and in five days more to be jarred or bottled—two days after the autumnal Equinox, Sept. 29. The earliest limit of Pyanepsion in the calendar of Solon was Sept. 19, the latest October 15, the proper or normal, October 11. In no year of his cycle then could the vintage be over before this month set in: and bunches of grapes, still ungathered, but ripe for gathering, might always be found on the 7th of this month, in any year of the cycle, the earliest as well as the latest.

The site of this month therefore in the natural year is as critically determined by these tokens, as that of any of these before it. It must have been the vintage-month, the month of ingathering, for the climate of Attica; and therefore the

[d] Cf. Harpocration in Ὀσχοφόροι: Phot. Lex. Περιαγειρόμενοι: Proclus, Chrestomathia, apud Phot. Cod. 239. 322. 13-30.

[e] xxii. xxiii. xxxvi.

[f] xxii and xxxvi.

[ff] xxiii.

[g] Cap. v. Uranologium, 287 B-E.

next to the autumnal Equinox: answering partly to the Julian September, and partly to the Julian October, just as our calendar shews it. And this conclusion will hold good of its site in the natural year without any regard to the etymon of the name: though that is certainly derivable in the first instance from *πυανέψιος*, and through that from *πύανα* and *ἕψειν*; and *πύανα* as entering into it must be understood of the mess or pottage of beans, and other leguminous fruits—the *ἔτνος* or *ἀθάρα*, prepared on this occasion,—another name of which, as we learn from Hesychius, was *πόλτος· τὸ πυανέψιον ἕψημα.* The explanation of the name of the *Πυανέψια*, as if the same with *πανόψια*, or *ἀπὸ τοῦ πάντας ἰδεῖν τοὺς καρποὺς ἐν ὄψει*—recognises the feast itself as that of ingathering properly so called; but on grammatical principles is untenable. The same may be said of its derivation from *κύαμος* and *ἕψειν*—which would have required *κυαμέψια*, not *πυανέψια* *. The true etymon is *πύανα* and *ἕψειν*, compounded together into *πυανέψια*: and this being the most characteristic ceremony of the month, or at least of the time of the year to which the month belonged—and much older than the correction of Solon—he thought proper to take the name of the month itself from this one of its observances; and to call it *Πυανεψιών*.

xi. Name of the month *Μαιμακτηριών*.

Μαιμακτηριών[h] . . . *ὠνόμασται δὲ ἀπὸ Διὸς Μαιμάκτου. μαιμάκτης δέ ἐστιν ὁ ἐνθουσιώδης καὶ ταρακτικὸς, ὥς φησι Λυσιμαχίδης ἐν τῷ περὶ τῶν Ἀθήνησι μηνῶν· ἀρχὴν δὲ λαμβάνοντος τοῦ χειμῶνος ἐν τούτῳ τῷ μηνὶ, ὁ ἀὴρ ταράττεται καὶ μεταβολὴν ἔχει*[i]—

* *Πυανοψιών*, which occurred in the Inscription, considered supra, page 42 sqq. *n.*, is probably a very ancient form of the name—even though supposed to have been originally a corruption of *Πυανεψιών*. And very possibly the antiquity of the name in this form might have given the first occasion to the explanation just referred to, which derived it from *πύανα* and *ὄψις*.

[h] Harpocration in voce: cf. Photius, and Suidas, *Μαιμακτηριών*: Etym. M. *Μαιμακτηριών*.

[i] Photius adds another gloss on the name, to the following effect; *Ὠνομάσθη δὲ ἀπὸ τῆς μαιμάξεως τῆς περὶ τὴν ἄμπελον. μαιμάξαντες γὰρ, ὅ ἐστιν ὁρμήσαντες, ἐτρύγησαν ἄμπελον καὶ οἶνον ἐποίησαν*: which, however absurd *per se*, and such as never could have proceeded from the pen of any sensible and well informed grammarian of antiquity, may have its use in illustration of the site of this month in the natural year, as that either of the vintage month, or of the next to it.

Μαιμᾷ· (corr. Μαιμαί·) . . . ὄξεως ὁρμαί[k]—Μαίμαξ· ταραχώδης[k]—Μαιμῶσα . . . κινουμένη[k]—Μαιμάωξ· κινουμένη[k].—Ἐμαίμασσε· . . . ἐκυμαιοῦτο, ἐκλονεῖτο, ἐταράττετο[k]—Μαιμάσασα· οἰστρήσασα[k]—Μαιμάσσει· σφύζει[k]—Διὸ καὶ τῶν θεῶν τὸν βασιλέα Μειλίχιον, Ἀθηναῖοι δὲ Μαιμάκτην, οἶμαι καλοῦσιν· τὸ δὲ κολαστικὸν ἐριννυῶδες καὶ δαιμονικὸν, οὐ θεῖον δὲ οὐδὲ Ὀλυμπικόν[l]. These glosses sufficiently intimate the verbal etymon and signification of the name of the month. It was derived first of all from Μαιμακτήριος; and through that from Μαιμακτὴρ and Μαιμάσσω: and it was probably sacred to Jupiter, (as the Personification of the principle presiding over and influencing the air,) under the title of Μαιμάκτης or Μαιμακτήριος, that is, the Turbulent or Boisterous: and consequently not at all times, but at the particular time of the year with which this month happened to coincide. The earliest limit of this month in the calendar of Solon was October 19, the latest Nov. 14, the normal Nov. 10. It was consequently the middle month between the autumnal equinox and the winter solstice; the most critical period in the transition from summer to winter, through the intermediate stage of autumn. The beginning of winter, in the Parapegmata of antiquity, for every climate, was dated with the Πλειάδων δύσις; and the Πλειάδων δύσις in all was a noted epoch for storms or commotions of the air,—as we shall frequently have occasion to observe[ll]. In the Parapegma of Meton and Euctemon the stated date of this phenomenon was Nov. 10; and on the same principle in the time of Solon it must have been November 9—only the day before the mean date of his Maimacterion itself. Those disturbances of the air then, which the ancients set down as the Ἐπισημασίαι, symptoms, or significations, of the cosmical setting of the Pleiads, every year necessarily fell out, if at all, in this month. It might well then be known and described as the first of the winter months of the calendar[m]. It is a curious coincidence that in the calendar of Charlemagne too, (the Frankish calendar,) the month which answered to this, (as both did to the Julian November,) was called by a similar

[k] Hesychius.

[l] Plutarch, De cohibenda Ira, ix.

[ll] Cf. our Prolegomena ad Harmoniam Evangelicam, cap. iv. 277.

[m] Cf. Ulpian, p. 35. ad Olynth. Γ. 603. where it is designated accordingly: χειμέριος οὗτος ὁ μήν.

name, the Windemonath, the month of winds and storms, the Maimacterion of the North.

xii. Name of the month Ποσειδεών.

Ποσειδεών· καὶ οὗτος μὴν Ἀθήνησιν, ὀνομασθεὶς ἀπὸ τοῦ καθιερῶσθαι τῷ Ποσειδῶνι[n]. This month then derived its name not from any natural characteristic or criterion, but from Posidon, one of the objects of worship among the Greeks before and after the time of Solon; and next to Zeus one of the greatest. Should it appear extraordinary, (as it possibly may to some of our readers,) that the name of no month except this, not even that of Hecatombæon, should have been directly taken from one of the objects of the national worship; the explanation of this phenomenon is probably another curious and interesting fact, the proof of which we are obliged to reserve at present. To judge from the testimony of Homer however, in his time there was one month in the calendar already sacred to Posidon; and that month the last of all. We have seen too that there was one month in the calendar of Solon, which took its name from the ceremony of marriage, and that the first of all; and it appears in like manner from the testimony of Homer that the first month of the calendar in his time also was consecrated to marriage. The inference, which we are entitled to draw from these facts laid together, is first, that the calendar of Homer's time was the same with that of Solon's, older than his correction, and the first month of the one was the first of the other, and the last of the one the last of the other; and that both were the same with the Primitive Solar Calendar. Secondly, that the Lunar Correction of Solon was this solar calendar, older than his correction, *mutatis mutandis* still retained: the first month of the former the first of the latter, and the last of the former the last of the latter.

There was no reference, as we observed, in the name of the month Γαμηλιὼν, to the season of the year; but there was a clear one to its place in the calendar. There is an equally clear reference in the name of this month Ποσειδεὼν, to its place in the calendar also, if that name was really given it for the reason just assigned; but whether there may not be

[n] Photii Lex. in voce.

in it also a reference to its site in the natural year, remains to be seen.

In the first place, Gamelion being the first month in the calendar of Solon, and Posideon the last, if Gamelion corresponded to January, Posideon must have corresponded to December; and if Gamelion was the month next after the winter solstice, Posideon must have been the month next before it, or the month of the solstice itself. The earliest limit of this month was Nov. 17, the latest Dec. 13, the proper or normal date was Dec. 9; and the mean winter solstice, for the time of Solon, (B. C. 593 or B. C. 592) falling Dec. 28, the true Dec. 27, it is manifest that, except in those years of the cycle in which the first of Posideon fell earlier than Nov. 27, both would always fall out in this month.

Secondly, it is to be observed that as these years in every cycle were the third, the fifth, and the eighth, they were the intercalary years of the cycle; and the seat of the intercalary month in the cycle of Solon being the end of the year, after the twelfth month in the calendar, and the name of this intercalary month being that of the twelfth repeated *, there was in each of these years a Ποσειδεὼν Β', or δεύτερος, which stepped in, to supply the place of the Ποσειδεὼν Α', or πρῶτος:

* We know these particulars of the intercalary rule of the cycle of Solon, not from any testimony to that effect, first and directly applicable to that cycle, but from the analogy of the same rule in the cycle of Meton. Meton made no change in the intercalary rule of Solon; and as the intercalary month in his cycle followed Ποσειδεὼν, and the name of this month in his calendar was Ποσειδεὼν β', as that of the month before it, in such years as had this second month, was Ποσειδεὼν α', we infer the same things, under the same circumstances, of the cycle of Solon.

And yet this might have been collected also from a statement which occurs in Macrobius, on the authority of Glaukippus, who wrote "De Sacris Atheniensium: Saturn. i. xiii. 265, 266—Omni autem intercalationi mensis Februarius deputatus est; quoniam is ultimus anni erat: quod etiam ipsum de Græcorum imitatione faciebant. nam et illi ultimo anni sui mensi superfluos interserebant dies, ut refert Glaucippus, qui de sacris Atheniensium scripsit. verum una re a Græcis differebant. nam illi confecto ultimo mense, Romani non confecto Februario . . . intercalabant. If this Glaukippus wrote on the Athenian ritual, this statement of his must have been intended first and properly of the intercalary rule of the Athenian calendar; and if so, of that of the calendar of Solon, not of that of the calendar of Meton, in which the seat of the intercalary month was at and consequently there was no year of the cycle in which the winter solstice, whether the mean or the true, did not fall out in the month Posideon; either the first Posideon, in the common years of the cycle,—or the second Posideon, in the intercalary.

Now Posidon, in the Greek Cosmogony, being the representative of the watery principle, some of the grammarians and scholiasts of antiquity seem to have thought that the name of Ποσειδεὼν was given to this month, because of its relation to the rainy season of the year. Thus the scholiast on Homer[o]: Ποσειδῶν δὲ τὸ συνέχον αἴτιον τὴν θάλασσαν ... καὶ ὑετοὶ ῥᾶμα (corr. ἄναμμα) ἀπὸ θαλάσσης ἔχουσι, καὶ Ἀττικοὶ τὸν περὶ χειμερίους τροπὰς μῆνα Ποσειδεῶνα καλοῦσι: which is repeated by Eustathius, and almost in the same words[p]: Πᾶς δὴ ὁ τοιοῦτος ἀὴρ Διὶ ἔλαχε ... Ποσειδῶν δὲ τὸ συνέχον αἴτιον τὴν θάλασσαν, ἐπεὶ πόσεως αἴτιος διὰ τοὺς ποταμοὺς καὶ τὰ λοιπὰ ὕδατα, ἃ ἐκ θαλάσσης διηθούμενα ἐκρέουσιν, ἀφ' ἧς καὶ οἱ ὑετοὶ, πότιμοι καὶ αὐτοὶ ὄντες, ἄναμμα ἔχουσιν. διὸ καὶ οἱ Ἀττικοὶ τὸν περὶ χειμερίους τροπὰς μῆνα Ποσειδεῶνα καλοῦσιν*. This explanation, in point of fact, no doubt is imaginary; the true reason being the historical one, just pointed out, the connection between this month and Posidon, even before the time of Homer; of which Solon knew more than these commentators upon him in later times. It proves however, just the same, that this month had a known and experienced relation to the rainy season in the natural year, derived from its seat at or about the winter solstice.

We may further illustrate the relation of this month in the Attic calendar to the winter solstice by means of the name which, as we learn from Gaza[q], was given to the

the *middle* of the year, after the *sixth* month, not at the *end*, after the *twelfth*. This rule indeed was common to the Hellenic Octaëteris of every Type, at least at first; and we have no doubt was founded in every other instance on the rule of that of Solon.

* A quotation follows from Anacreon, in which the month Ποσειδεὼν (Ποσιδηϊὼν) is mentioned by name, and as a rainy month: cf. Anacreontis Fragm. Στ. vi. 337. And there was such a month in the old Ionic calendar, as we shall see hereafter.

[o] Ad Iliad. O. 188. [p] Ad Iliad. O. 190. 1011. 62. [q] De Mensibus, iii. Uranologium, 281 A.

halcyon—Ποσειδεωνὶς, or the Bird of Posideon; so given it, because of its breeding and rearing its young, in this month, at the ordinary season of storms and tempests, yet, under the circumstances of the case, (according to the tradition of classical antiquity,) in the midst of an extraordinary calm, and freedom from such commotions. The story of Keÿx and Halkyone must be familiar to the classical reader. Ovid, after relating the untimely end of Keÿx, and the metamorphosis both of the husband and the wife into the bird, called by the ancients Ἁλκυὼν, concludes his account as follows:

> Fatis obnoxius iisdem
> Tunc quoque mansit amor: nec conjugiale solutum
> Fœdus in alitibus. coeunt fiuntque parentes,
> Perque dies placidos, hyberno tempore, septem
> Incubat Halcyone pendentibus æquore nidis.
> Tum via tuta maris: ventos custodit, et arcet
> Æolus egressus; præstatque nepotibus æquor [r].

This shortlived interval of tranquillity in the depth of winter, the classical fable attributed to a special dispensation on the part of the gods, in behalf of Halkyone, now doomed to hatch her young on the bosom of the sea, and in the midst of storms and tempests: *Φασὶ δὲ ὅτι κῦμα ἀφανίζον*[s] *αὐτῆς τὰ ᾠὰ, καὶ ἐπιπολὺ οὔσης ἀτέκνου, ὁ Ζεὺς ἐλεήσας αὐτὴν ὥρισεν ἡμέρας τινὰς εὐδιεινὰς, ἐν αἷς τίκτει καὶ ἐκγλύφει, ἑπτὰ ἑπτὰ*, ἃς λέγουσιν Ἁλκυονίδας, τὰς γαληνούς—Ζεὺς δὲ θεασάμενος αὐτὴν κλαίουσαν κατελεήσας ἐπέταξε τοῖς ἀνέμοις καθ᾽ ὃν καιρὸν ἡ Ἁλκυόνη τίκτει μὴ πνεῖν μέχρι ιδ´ ἡμερῶν, τοῦ χειμῶνος αὐξανομένου*[t].

These *ἁλκυονίδες ἡμέραι* indeed are differently represented, both as to the time of their setting in, and as to their duration. If the days which Democritus called *ποικίλαι*, or varii, were meant of these; he made them begin on the 4th of Ichthyon, according to Geminus, Feb. 25—on the 30th of Mecheir, according to Ptolemy, Feb. 24—on the viii Kal.

* The number of the daughters of Keÿx and Halcyone was seven or eight: cf. Suidas, *Ἁλκυονίδες ἡμέραι*, and Anecdota in voce, 377. 16: and that was probably the reason why the number of these days was limited to seven in hatching, and seven in rearing, the young of the bird.

r Metam. xi. 742. cf. Scholia in Aristoph. ad Aves, 251: ad Ranas, 1344.

s Etym. M. Ἁλκυών. Corrige *κύματος ἀφανίζοντος, κ᾽, τ. λ.*

t Scholia ad Iliad. T. 562. cf. Anecdota Græca Parisiensia, iv. 5. 3–16: Etymolog. Cod. 2720.

Mart. Feb. 22, according to Columella[v]—and last 30 days. But they are most commonly represented as seven days before the solstice, and seven more after it; the first seven devoted to hatching the young of the halcyon, the second to bringing them up until they were able to fly. Ante Brumam autem septem diebus, totidemque postea, sternitur mare Halcyonum feturæ[x]—Circa Brumam plerisque bis septem, Halcyonum fetura ventorum quiete, mollius cœlum[y]. And their number is generally represented as fourteen, though some made it only seven; others only nine. Hence Hesychius; Ἁλκυονίδες, ἡμέραι τινὲς, τὸν ἀριθμὸν ιδ′, γαληναὶ, ἐν αἷς νεοσσεύει ἡ ἁλκυών.

The earliest authority for this fable, at present, would be some fragments of Alcman, which appear to recognise it *, or one of Simonides, quoted by Aristotle, De Animalibus; the production of which will suffice for our purpose[yy]: Τὸ δὲ τῶν ὀρνίθων γένος, ὥσπερ εἴρηται, τὸ πλεῖστον περὶ τὸ ἔαρ ποιεῖται καὶ ἀρχομένου τοῦ θέρους τὴν ὀχείαν καὶ τοὺς τόκους, πλὴν ἁλκυόνος. ἡ δὲ ἁλκυὼν τίκτει περὶ τροπὰς τὰς χειμερινάς· διὸ καὶ καλοῦνται, ὅταν εὐδιειναὶ γένωνται αἱ τροπαὶ, ἁλκυόνειοι ἡμέραι, ἑπτὰ μὲν πρὸ τροπῶν ἑπτὰ δὲ μετὰ τροπάς· καθάπερ καὶ Σιμωνίδης ἐποίησεν·

* The male halcyon when it became old, the ancients tell us, was called *κηρύλος*; and they add, that when unable to fly of itself, it was carried by the female birds on their own wings. Alcman, in one of his fragments, which has been often quoted, compared his own state to that of one of these *κηρύλοι*—now grown too old to stir; and wished he might be turned into such a bird, that he too might be carried about by the female.

> Οὔ μ' ἔτι, παρθενικαὶ μελιγάρυες ἱερόφωνοι,
> γυῖα φέρειν δύναται· βάλε δὴ βάλε κηρύλος εἴην,
> ὅς τ' ἐπὶ κύματος ἄνθος ἅμ' ἁλκυόνεσσι ποτᾶται,
> νηλεὲς ἦτορ ἔχων, ἁλιπόρφυρος εἴαρος ὄρνις.

Cf. Antigonus Carystius, Ἱστοριῶν παραδόξων συναγωγή. Cap. xxvii. p. 26. Athenæus, ix. 16: Plutarch, De Solertia Anim. xxxv.: Hesychius, *κήρυλος*: *βάλε*: *ἀλίβαπτον*: Phot. Lex. *κείρυλοι*: Etym. M. *ἄβαλ*: *βάλε*: Suidas, *βάλε*, *βάλε*: Schol. in Arist. ad Aves, 251. 300: Schol. in Theocrit. ad Idyll. vi. 57.

[v] These dates, though nominally different, were really the same: see our Origines Kal. Italicæ, iv. 157. 163 sqq.

[x] Pliny, H. N. ii. 47.

[y] Ibid. xviii 62. p. 203.

[yy] v. 8. cf. Poëtæ Min. Gr. Simonides. Frag. xviii: Anthologia, i. 62. Simonides, xv. b.

Ὡς ὁπόταν χειμέριον κατὰ μῆνα
πιτύσκῃ Ζεὺς ἤματα τεσσαρακαίδεκα,
λαθάνεμόν τέ μιν ὥραν
καλέουσιν ἐπιχθόνιοι, ἱεράν
παιδοτρόφον ποικίλας ἀλκυόνος.

γίνονται δ' εὐδιειναὶ ὅταν συμβῇ νοτίους γίνεσθαι τὰς τροπὰς, τῆς Πλειάδος βορείου γενομένης. λέγεται δ' ἐν ἑπτὰ μὲν ἡμέραις ποιεῖσθαι τὴν νεοττιὰν, ἐν δὲ ταῖς λοιπαῖς ἑπτὰ ἡμέραις τίκτειν τὰ νεόττια καὶ ἐκτρέφειν. περὶ μὲν οὖν τοὺς ἐνταῦθα τόπους οὐκ ἀεὶ συμβαίνει γίνεσθαι ἀλκυονίδας ἡμέρας περὶ τὰς τροπὰς, ἐν δὲ τῷ Σικελικῷ πελάγει σχεδὸν ἀεί.

These fourteen days then devoted to the Halcyonum fetura, as Pliny called it, Simonides thus fixed *χειμέριον κατὰ μῆνα*, Aristotle *περὶ τροπὰς τὰς χειμερινὰς*, and the epithet applied by some of the ancients, according to Gaza, to the halcyon itself, to the month Posideon: Καλεῖται δὲ *Ποσειδεωνὶς τοῖς πολλοῖς ἡ ὄρνις· παρά του τῶν ἀστείων ὡς ἔοικε τοὔνομα εἰληφόσι, παρὰ τὸ τίκτειν Ποσειδεῶνος μηνός.* But we have said enough both of the site of this month, and of that of the rest, according to the appointment of Solon at least. It must now appear that among these, Anthesterion, Elaphebolion, Thargelion, Skirrhophorion, Hecatombæon, Pyanepsion, Mæmacterion, and this month Posideon, could not, consistently with their names and the reasons and meanings thereof, have occupied any other places in the natural year, than those which were actually assigned them in his Calendar. And if this coincidence cannot be resolved into chance, it will follow that these names must have been purposely given them by Solon, when he corrected the calendar.

CHAPTER V.

On the beginning of the civil year at Athens, from the time of the Correction of Solon, to that of the Correction of Meton.

SECTION I.—*Reasons for treating this question as still open to doubt and controversy.*

WE might have been content to rest the decision of this question on the natural inference from the conclusions established in the preceding chapters; viz. that the lunar year at Athens, having originally taken up and continued the more ancient equable solar year, began in the first instance at the same season of the natural year, and even on the same day as that, B. C. 592; and consequently that the civil year, which from the time of the correction of Solon downwards was this lunar year, as long as that correction continued in use, must have begun at the same season of the natural year also: from which it will follow that it must have been still beginning at the same season down to the correction of Meton.

But as this is a point on which opinions have been much divided, and the most learned chronologers have come to very different conclusions: we shall perhaps be excused if we propose to consider it as still open to doubt and controversy, and even as a question which required to be discussed without any reference to the previous history of the Athenian calendar. In our opinion, the means of coming to a right conclusion upon it, entirely independent of our own discoveries, and simply as a question of fact at a particular time, were always in existence, and always available, had the prejudices of the learned allowed them to be rightly applied. We propose therefore to discuss this question in the present chapter—the Proposition which we hope to establish being *this*; that B. C. 431, in the first year of the Peloponnesian War, the Archontic year at Athens was beginning on the first of Gamelion, and not on the first of Hecatombæon: from which it will follow that, though the date of the publication of the correction of Meton was certainly B. C. 432, the date of its reception, and of any change in the beginning of the official year, which might have been the consequence of it, could not have been B. C. 432. It is easy to foresee that, if such a proposition is to be proved by testimony *ab extra*, it must be principally, if not entirely, by that of Thucydides, the historian of the Peloponnesian War.

Section II.—*On the beginning of the official year at Athens in the first year of the Peloponnesian War.*

i. Date of the Archonship of Pythodorus.

Ἄρχεται δὲ ὁ πόλεμος ἔνθενδε ἤδη Ἀθηναίων καὶ Πελοποννησίων καὶ τῶν ἑκατέροις ξυμμάχων, ἐν ᾧ οὔτε ἐπεμίγνυντο ἔτι ἀκηρυκτὶ παρ' ἀλλήλοις, καταστάντες τε ξυνεχῶς ἐπολέμουν· γέγραπται δὲ ἑξῆς ὡς ἕκαστα ἐγίγνετο κατὰ θέρος καὶ χειμῶνα.

Τέσσαρα μὲν γὰρ καὶ δέκα ἔτη ἐνέμειναν αἱ τριακοντούτεις σπονδαὶ[z], *αἳ ἐγένοντο μετ' Εὐβοίας ἅλωσιν· τῷ δὲ πέμπτῳ καὶ δεκάτῳ ἔτει ἐπὶ Χρυσίδος ἐν Ἄργει τότε πεντήκοντα δυοῖν δέοντα ἔτη ἱερωμένης, καὶ Αἰνησίου ἐφόρου ἐν Σπάρτῃ, καὶ Πυθοδώρου*[a] *ἔτι δύο μῆνας ἄρχοντος Ἀθηναίοις, μετὰ τὴν ἐν Ποτιδαίᾳ μάχην μηνὶ ἕκτῳ, καὶ ἅμα ἦρι ἀρχομένῳ, Θηβαίων ἄνδρες . . . . ἐσῆλθον περὶ πρῶτον ὕπνον ξὺν ὅπλοις ἐς Πλάταιαν τῆς Βοιωτίας*[b], *κ', τ. λ.*

The proper beginning of the war (i. e. the first overt act of hostility on either side) is thus dated with the surprise of Platæa by the Thebans; and it might be so dated, if the Thebans were now the allies of the Lacedæmonians, and the Platæans from as far back as 93 years before B. C. 427, according to Thucydides[c] (i. e. B. C. 519 or 520), had been attached to Athens, and under the protection of the Athenians. It is important to bear this in mind; and that no distinction could now be drawn between an act of aggression on the Platæans and one on the Athenians—between the invasion of the Platæan territory and that of the Athenian: because the first actual invasion of the Attic territory by the Peloponnesians and their allies did not take place until eighty days after this attempt on Platæa.

Among the notes of time then here enumerated, serving as criteria of the precise date of this first overt act of hostility, in the different styles of Argos, Sparta, and Athens respectively; we are concerned at present only with the last, Ἐπὶ... *Πυθοδώρου ἔτι δύο μῆνας ἄρχοντος Ἀθηναίοις.* It is agreed that

[z] That is, from B. C. 446 or 445. See Diodor. Sic. xii. 7. Callimachus, 5. Pausanias, v. xxiii. 3. Ol. lxxxiii. 3. Criso of Himera: Thucyd. i. 114, 115.

[a] Cf. Scholia in Aristoph. ad Pacem, 604. Φειδίας: ad 990, τὸ χ': Athenæus, vi. 26. Photii Lex. παράσιτοι: Moeris, παρασίτους.

[b] Thucydides, ii. 1.

[c] iii. 68. Cf. Herodotus, vi. 108.

the date of the first year of the war was B. C. 431 ; and consequently the archon of that first year must have been, either wholly or in part, the archon of B. C. 431 : but whether wholly so, or only in part, depends upon the question, Whether his year of office began and ended in B. C. 431—or began in B. C. 432, and ended in B. C. 431. The majority of commentators on Thucydides, and of chronologers in general, having taken it for granted that the Metonic correction was not only made public, but received into use, at Athens, B. C. 432, have taken it for granted also that the archontic year of Pythodorus began at the middle of B. C. 432, and ended at the middle of B. C. 431. The question of the true date of the adoption of the Metonic correction is necessarily to be reserved for future consideration. At present we must confine ourselves simply to the argument from Thucydides; and simply to *his* language and phraseology, as defining the epoch of the war, according to the style of Athens; and to the inference deducible from it.

Now in this phrase, Ἐπὶ . . . . Πυθοδώρου ἔτι δύο μῆνας ἄρχοντος Ἀθηναίοις, the most important word to the present question is the adverb of time ἔτι. The proper meaning of this adverb is *still* or *yet* : and the simple grammatical sense of the whole proposition in English can be nothing but *this* : When Pythodorus was *still*, or Pythodorus was *yet*, two months governing (two months serving as archon), unto or for the Athenians. It is manifest however that, as so stated and enunciated, it is liable to a double construction, according as this *yet*, or this *still*, is understood of two months *past*, or two months *to come*, in the duration of the term of office of this one and the same individual. The difference between these two constructions, as concerns the question of the actual commencement of his year at this time, will be very considerable. According to one, the year of Pythodorus must have begun two months before this attempt, and must have lasted ten months after it : according to the other, it must have begun ten months before it, and continued two months after it. And these two are the only constructions which can be put on this passage : and the adverb ἔτι, it is evident, *per se* is indifferent to either. It can have no signification on any construction except that of *yet* or *still* : but the question will remain whether this *yet* or *still* is retrospective or prospective? whether the two months of a given official year, which it marks and defines as still current and incomplete, are two months *after* the beginning, or two months *before* the end.

Parallel phrases which might be compared with this, of Ἐπὶ Πυθοδώρου ἔτι δύο μῆνας ἄρχοντος, are rare in their occurrence. There is one in the Cicero of Plutarch[d], Ἔτι τοῦ Κικέρωνος ἡμέρας ὀλίγας ἄρχοντος, which is intended of a short time before the end of his consular year, B. C. 63. There is another in Dio[e], Καὶ πάντας μετὰ τοῦτο τοὺς στρατηγοὺς πέντε ἡμέρας ἔτι ἄρχοντας παύσαντες, κ', τ. λ.—which also the context determines to be meant of five days before the end of the official year B. C. 43: similar instances to which, though not in the same kind of language, are recorded by him at the end of B. C. 40[f], and at the end of B. C. 33[g].

These two examples then of the same kind of phraseology, under the same or similar circumstances, would seem to favour the common construction of this phrase of Thucydides also. Assuming however (as every one in candour would be bound to admit), that it could make no real difference to the grammatical meaning of such a phrase, whether the qualifying adverb were ἔτι, or οὔπω, or ἤδη; we may observe that the mode of speaking employed by Thucydides in this instance is analogous to that which he uses of the breaking out of the plague, after the second invasion of Attica, B. C. 430: Καὶ ὄντων αὐτῶν οὐ πολλάς πω ἡμέρας ἐν τῇ Ἀττικῇ ἡ νόσος πρῶτον ἤρξατο γενέσθαι τοῖς Ἀθηναίοις[h]. For what difference would it have made to the sense of these words, if the passage had stood, Καὶ ὄντων αὐτῶν οὐ πολλὰς ἔτι ἡμέρας ἐν τῇ Ἀττικῇ, instead of οὐ πολλάς πω ἡμέρας? In either case the meaning would have been, Before they had been many days in Attica—When they had still been only a few days in the country. Consequently, if Thucydides had proposed in the former instance to say, Before Pythodorus had been two months in office as archon—When Pythodorus was still a two months' archon—of these two modes of expressing that proposition (both to the same effect, and each alike agreeable to his own idiom), Ἐπὶ Πυθοδώρου ἔτι δύο μῆνας ἄρχοντος, and

[d] xxiii. [e] xlvii. 15. [f] xlviii. 32. [g] xlix. 43. [h] ii. 47.

Ἐπὶ Πυθοδώρου οὔπω δύο μῆνας ἄρχοντος—no one could have undertaken to say beforehand which he would be more likely to employ. With οὔπω and ἤδη indeed, if not with ἔτι, similar phrases may more frequently be found. There is one, in Lysias[i]; Ἀφικόμενος προπέρυσιν εἰς τὴν πόλιν, οὔπω δύο μῆνας ἐπιδεδημηκὼς κατελέγην στρατιώτης. What difference would it make, if this passage were read at present, Ἔτι δύο μῆνας ἐπιδεδημηκὼς κατελέγην στρατιώτης? The thing implied would still have been the same, viz. That he was enlisted before he had been two months at home. There are two more in Demosthenes; Ὁ γὰρ Εὐκτήμων . . . . εἰδὼς τόν τε χρόνον ἐξήκοντά μοι τῆς τριηραρχίας, καὶ ἤδη ἐπιτριηραρχοῦντά με κ', τ. λ.[k] —Οὗτος γὰρ ἐπειδὴ ἀφίκετο εἰς Θάσον ἤδη μου τέταρτον μῆνα ἐπιτριηραρχοῦντος[l]: which last, with the exception of ἤδη for ἔτι, is german to Thucydides' phrase of ἔτι δύο μῆνας ἄρχοντος. There is a similar phrase in the Aratus of Plutarch, which wants only the supplement of ἔτι or ἤδη, to make it equally german to either: Τοῦ δὲ Νικοκλέους τέσσαρας μῆνας τυραννοῦντος[m]: for that the meaning is, When Nicocles had been four months, not more, in possession of the tyranny, is unquestionable*.

We may observe too that the scholiast on Thucydides seems to have understood the phrase as if it was meant to imply that Pythodorus had still *ten* months to serve: for he explains this statement of ἔτι δύο μῆνας ἄρχοντος, as if equivalent to δέκα μῆνας ἄρχοντος· κατὰ ἐνιαυτὸν γὰρ ἠλλάσσοντο[n]: i. e. as if, having been only two months in office, he had still ten months to serve. Upon the whole then we may justly contend that, however generally the learned might have agreed to give these words of Thucydides a sense which would make them entirely prospective, it would be equally agreeable to his idiom, and to the authority of the best

* Compare also the following, which occur in Philostratus' life of Apollonius; Ποστὸν δὲ δὴ τοῦτο ἔτος τῇ ἀνακτηθείσῃ ἀρχῇ; τρίτον ἔφη ἁπτόμεθα δύο ἤδη που μῆνας: i. xix. 39 C—Ἐπεφοίτα δὲ ἄρα τῇ κώμῃ δέκατον ἤδη μῆνα Σατύρου φάσμα: vi. xiii. 302 D—Ἐγὼ ἔφη ὦ παρόντες τουτονὶ μῆνα δέκατον Ἀπολλωνίῳ διατελῶ εὐχόμενος: viii. xiii. 430 C.

[i] Oratio ix. Ὑπὲρ τοῦ στρατιώτου, § 4.

[k] Oratio l. Πρὸς Πολυκλέα, § 32.

[l] Ibid. § 39.

[m] Aratus, iv.

[n] Cf. Corsini, F. Attici, pars i. tom. i. p. 95, 96. Diss. ii. cap. xxiii.

writers in the Greek language besides, to construe them as retrospective. We admit however that being open to both constructions they cannot be appealed to as decisive on either side. Thus much, notwithstanding, may be assumed; viz. That whatsoever may be supposed the meaning of this particular form of words, the question really at issue is this, Whether the date of the surprise of Platæa was the end of the *second* month of Pythodorus' year of office, or the end of the *tenth?* whether it was ten months before the expiration of his year, or two? in other words, whether the date of the attempt was the end of the month Anthesterion in the calendar for B. C. 431, or the end of the month Munychion? for that it was the end of *some* month we are told expressly by Thucydides: *Τελευτῶντος τοῦ μηνὸς τὰ γιγνόμενα ἦν*[o]. The question then which we have to discuss after all is this; Whether it is more consistent with the circumstances of the attempt, as related by Thucydides, and with various other considerations not yet mentioned, that the precise date of the attempt should be supposed the last day of Anthesterion, for the time being, March 7 B. C. 431, or the last day of Munychion, May 5? And this accordingly is that state of the question, to which we propose to restrict ourselves in what we shall say further on this subject.

ii. Circumstances of the Surprise of Platæa.

Among these circumstances, the first to be observed, is the darkness of the night: Οἱ *γὰρ Πλαταιῆς ... οὐ γὰρ ἑώρων ἐν τῇ νυκτί ... φυλάξαντες ἔτι νύκτα καὶ αὐτὸ τὸ περίορθρον ἐχώρουν ... ἐπ' αὐτούς*[p]—*Καὶ ... ἄπειροι μὲν ὄντες οἱ πλείους ἐν σκότῳ . . τῶν διόδων, ᾗ χρὴ σωθῆναι*[q]: though neither can we insist upon this, as a decisive criterion of the time of the attempt —because Thucydides tells us it was the end of the month or the end of the moon; at which time in a lunar calendar, the nights would necessarily be dark. Yet it should be considered notwithstanding, whether the darkness of the night even at the end of the lunar month was a circumstance which could have been specified and insisted upon, for the climate of Attica, with the same propriety at the end of the last of

[o] ii. 4. [p] ii. 3. [q] ii. 4.

the spring months, May 5, only 54 days before the summer solstice, as at the end of the first, March 7, only 71 days after the winter solstice.

But besides the darkness of the night, another circumstantial coincidence, of a much more critical description, is mentioned also; that of the rain, which fell the same night between the entrance of the Thebans into Platæa *περὶ πρῶτον ὕπνον*, and the attack of the Platæans upon them *περὶ αὐτὸ τὸ περίορθρον*: and in such abundance as not only to block up the streets with mud, but to swell the Æsopus so as materially to retard the reserve from Thebes, which was intended to follow the invaders the same night, and to arrive soon after them. All this is clearly attested by Thucydides. The rain had fallen in abundance, *Ὑετοῦ ἅμα διὰ νυκτὸς πολλοῦ ἐπιγενομένου* [r]; the streets were filled with mud, *Ἄπειροι ... ἐν σκότῳ καὶ πηλῷ τῶν διόδων* [r]: the Æsopus had risen into a torrent and was not easy to be crossed: *Ὁ γὰρ Ἀίσωπὸς ... ἐρρύη μέγας, καὶ οὐ ῥᾳδίως διαβατὸς ἦν* [s].

This description, in our opinion, and as referrible to the climate of Greece, is or ought to be decisive to what season of the year it could have belonged. In that climate, both the fine weather and the rainy season were comparatively stated and regular; and it would have been almost a contradiction of the order of nature there in particular, to have supposed such a night as this an ordinary phenomenon of the last day of Munychion; though not so at the end of Anthesterion. In the Parapegma of Euctemon (which we consider to have been nothing essentially different from that of Meton his contemporary and associate), the first of Karkinon being assumed to have borne date on the summer solstice, as determined by him and Meton, June 27, Ægon or Ægokeron bore date on the winter solstice, Dec. 25, Hydron or Hydrochoön with the ingress into Aquarius, Jan. 23, Ichthyon with that into Pisces, Feb. 22: and Anthesterion 30, March 7, B.C. 431, was the fourteenth day of the sun in Pisces—in which sign, and at that period of it, rain, and rain in abundance, might be no extraordinary occurrence even for the climate of Attica or Bœotia. But the vernal sign, Krion, bearing date

[r] ii. 4, 5. [s] Cf. Demosthenes, lix. 129–131. Contra Neæram.

on the assumed day of the vernal equinox, March 24, Tauron bore date April 24; and May 5, which coincided with Munychion 30 that year, was the twelfth day of the sun in Taurus: at which time, and for the climate either of Bœotia or of Attica, we may venture to say such a night as this of the surprise of Platæa, and such a state of the air and the weather as is implied thereby, would be contrary to the usual course of nature.

There could have been little difference in these respects between the proper characters of the 30th of Munychion and those of the 1st of Thargelion. Let us be permitted to remind the reader of the etymon of the name of this last month, and of the reasons on which it was founded; That it was so called because *Θάργηλος* so used denoted *θερμὸς*, and this was the first of the hot months; that the sun in this month was *πυρώδης* or fiery, the air was hot and sultry: that the flowers were over in this month, and the verdure of the country was beginning to fade: that the first fruits of barley harvest began to be ripe as early as the sixth of this month: that its place in the natural year was next before Skirrhophorion, the first of the months in which the heat of the sun was so overpowering, that the use of umbrellas or parasols, which that circumstance rendered necessary as a precaution against strokes of the sun, gave its name to the month. And bearing all this in mind, let him read in Thucydides the account of the night of the surprise of Platæa; and then say whether he can recognise in any circumstance of that description the natural tokens of such a night, as might be supposed to have preceded the first of Thargelion.

iii. Beginning of Spring in the idiom of Thucydides.

Another of the characteristic notes of the time of the surprise of Platæa specified by Thucydides, we may observe, was this of *Ἅμα ἦρι ἀρχομένῳ*—that it took place, in the year of Pythodorus, *ἅμα ἦρι ἀρχομένῳ*. It is well known that, as the positive rule of reckoning and distinguishing the chronology of his history of the war, instead of making use of the succession of Archons or Ephors, or of any other civil note and division of time, except in the first instance of all, and in order to define the epoch of the war in the style of the two principal parties in it, he adopts the simple division of the year into *θέρη* and *χειμῶνες*, summers and winters—but so that the whole year being divided into two such halves, and under two such names, his summer, in the sense in which he intended and used it, comprehended the spring, and his winter, similarly used and understood, comprehended the autumn.

It follows from this rule of dividing the year, that spring with him must have begun much earlier than what is implied by the same term in its ordinary acceptation. The fact of this anticipation is easy to be proved, from his own testimony. The return of Phormio, for instance, and the Athenians, from Naupactus, is dated *ἅμα ἦρι*[t], B. C. 428: yet directly after, it is observed, Καὶ ὁ χειμὼν ἐτελεύτα οὗτος, καὶ τρίτον ἔτος τῷ πολέμῳ ἐτελεύτα τῷδε ὃν Θουκυδίδης ξυνέγραψε: so that spring had already begun this year before the last half of his year had expired. In like manner, speaking of an eruption of Mount Ætna, B. C. 425, he dates it in the spring: Ἐρρύη δὲ περὶ αὐτὸ τὸ ἔαρ τοῦτο ἡ ῥύαξ τοῦ πυρὸς ἐκ τῆς Αἴτνης[v]: yet directly after, Ταῦτα μὲν κατὰ τὸν χειμῶνα τοῦτον ἐγένετο, καὶ ἕκτον ἔτος τῷ πολέμῳ ἐτελεύτα τῷδε[x] κ᾽, τ. λ. B. C. 422–421 also it is observed historically, Καὶ τόν τε χειμῶνα τοῦτον ᾔεσαν ἐς λόγους, καὶ πρὸς τὸ ἔαρ ἤδη παρασκευή τε προεπανεσείσθη[x] κ᾽, τ. λ.: yet this was prior to Elaphebolion 25[x], April 10, B. C. 421, when peace was actually concluded: so that spring with Thucydides this year was dated a good while before Elaphebolion 25, April 10 at least[y].

In like manner the *θέρος* of Thucydides, the other half of his natural in the sense of his civil year, began much earlier than the *θέρος*, or summer, in the ordinary sense of the term; as early in fact as the vernal equinox—three months before the beginning of summer in the modern sense. It is mentioned, for instance, in the 8th year of the war, B. C. 424: Τοῦ δ᾽ ἐπιγιγνομένου θέρους εὐθὺς τοῦ τε ἡλίου ἐκλιπές τι ἐγένετο περὶ νουμηνίαν, καὶ τοῦ αὐτοῦ μηνὸς ἱσταμένου ἔσεισε[z]. This was the eclipse which appears in the Tables March 21, 8 a. m. Paris, B. C. 424. The calendar in use at Athens at this time

[t] ii. 103.
[v] iii. 116. cf. Corsini, F. A. iii. 285: also p. 289: Parian Marble, Epocha lii: Diodor. Sic. xiv. 59.
[x] v. 17. 19.
[y] Cf. iv. 135, B. C. 422–421: v. 39, B. C. 421–420: v. 40, B. C. 420: v. 81, B. C. 417.
[z] iv. 52.

was the Metonic; and in that calendar, Cycle i. 8, Elaphebolion 1 actually fell on March 21 B.C. 424. The vernal equinox, attached to March 24 in the solar calendar of Meton, fell on Elaphebolion 4 the same year: so that this year the chronological θέρος of Thucydides had begun four days before the vernal equinox. At the end of this year (B. C. 423) he observes, Καὶ τοῦ χειμῶνος διελθόντος ὄγδοον ἔτος ἐτελεύτα τῷ πολέμῳ[a]: and directly after, Λακεδαιμόνιοι δὲ καὶ οἱ Ἀθηναῖοι ἅμα ἦρι τοῦ ἐπιγιγνομένου θέρους εὐθὺς ἐκεχειρίαν ἐποιήσαντο ἐνιαύσιον[b], which, it appears[c], was to bear date from Elaphebolion 14 March 23, the same year: so that here we have his chronological θέρος already begun before March 23. And speaking subsequently of the expiration of this truce, (which of course could not be earlier than Elaphebolion 14 March 13 the next year,) he dates that too in his θέρος[d]: Τοῦ δ᾽ ἐπιγιγνομένου θέρους αἱ μὲν ἐνιαύσιοι σπονδαὶ διελέλυντο μέχρι Πυθίων, κ, τ. λ.

The truth is that though, in the time of Homer, no divisions of the natural year appear to have been recognised among the Greeks except these three, of the θέρος, the ὀπώρα, and the χειμών; yet by the time of Hesiod, much later than Homer, two more at least had been added to them; and in the time of Hippocrates, a contemporary of Thucydides', they were seven at least in number, two of the spring, three of the summer and autumn, and two of the winter. Among these, we shall confine ourselves at present to those which concerned the spring. The ancients speak of three criteria of the approach or arrival of spring; the latest, the first ap-

[a] iv. 116. [b] iv. 117. [c] iv. 118.

[d] v. 1. The peace, concluded at the end of the tenth year, B. C. 421, is dated τελευτῶντος τοῦ χειμῶνος ἅμα ἦρι—v. 20: yet on the 25th of Elaphebolion, April 10—v. 19. The spring is reckoned into the summer, v. 40, B.C. 420: vi. 7. 8, B. C. 415: vi. 94, B. C. 414: viii. 61, B.C. 411. None of these passages can occasion any difficulty even as compared with our assertion supra, that spring is reckoned by Thucydides from a much earlier point of time in the natural year than the vernal equinox. When he speaks of the beginning of spring ἁπλῶς, he means a time much earlier than the vernal equinox: when he speaks of it as anticipated by and comprehended in his summer, he means it as dated from the vernal equinox. His early spring is the end of his χειμὼν, his late the beginning of his θέρος. Nor is this rule of reckoning confined to Thucydides. Xenophon has adopted it also; reckoning his winter from the end of his summer, and his summer from that of his winter. See i. 1. § 2 and 37: Cap. 2. § 1: § 2–4: § 14–17: Cap. 3. § 1: Cap. 4. § 1, 2: Cap. 5. § 21: Cap. 6. § 1; which last, by mentioning the lunar eclipse of April 15 B. C. 406, yet after the beginning of the year, implies that the summer of Xenophon also bore date from a point of time earlier than April 15 at least.

pearance of the ἰκτῖνος, milvus, or kite, which, for the climate of Attica, was the signal of the time for shearing the sheep: the next before that, the appearance of the swallow; which in Hesiod's time was the signal for pruning the young shoots of the vine: the first and earliest, (and noted accordingly in all the Parapegmata of antiquity as the proper commencement of the early spring, and as the proper time for the resumption of the horticultural or agricultural labours of the season,) the Ζεφύρου πνοὴ or Flatus Favonii. We may have occasion to collect the testimonies to this point on a future opportunity. It is sufficient at present to remind the reader of what we observed supra[e], that, as referrible to the two cardinal points of the winter solstice and the vernal equinox, one before, the other after, the period of the natural year supposed to be regularly distinguished by this phenomenon, it was as nearly as possible in all the calendars of antiquity the middle point between them: and as such, in the Lunar correction of Solon, it would fall sometimes in the first month, sometimes in the second, but always in one or the other in every year of the cycle. In this particular year, B.C. 431, the second of the xxist cycle from the epoch, Jan. 19 B.C. 592, the first of Anthesterion bore date Feb. 6; very nearly on the stated date of the Ζεφύρου πνοὴ itself, assumed on the principle just adverted to—45 days from the winter solstice, Dec. 26 or 27. The annual recurrence of this phenomenon in the idiom of antiquity was the beginning of spring: and whensoever we meet with a date of the ἦρος ἀρχὴ or *veris initium,* stated absolutely, it is almost always found to be reducible to this.

It cannot therefore be supposed that the spring of Thucydides, (dated by him so much earlier than the vernal equinox,) could have begun much later than this season in the natural year; which not only in the Parapegmata of his time, but also in the popular language every where, was the recognised article of its commencement. With reason then might he date an event, which happened on the night before the 30th of Anthesterion, the first of the three spring months of the calendar, ἅμα ἦρι ἀρχομένῳ; but not so one which occurred two months later, on the night before the 30th of Munychion.

[e] Page 100.

the last of the three months of spring; and only the day before the first of the months of summer.

For it is further to be observed, that the proper beginning of summer in the opinion and belief of antiquity, and in the Parapegmata of the time, was ushered in by its proper natural phenomena as much as the beginning of spring. The *θέρους ἀρχὴ* in them all was the *Πλειάδων ἐπιτολὴ*, as the *ἦρος ἀρχὴ* was the *Ζεφύρου πνοή*; and the *Πλειάδων ἐπιτολὴ* in the Attic calendar almost always fell out in the month next to Munychion, the month Thargelion. In the solar calendar of Meton, its stated date was the 6th of May; and it is a curious coincidence, that in his lunar calendar, the 29th of Munychion B. C. 431 fell on this very day: so that, if the surprise of Platæa took place, as the learned have hitherto supposed, on or about the 30th of this month, we should have Thucydides talking of an event as happening *ἅμα ἦρι ἀρχομένῳ* which happened in reality *ἅμα ἦρι τελευτῶντι,* and at the beginning of summer. It is singular that they should have shut their eyes so long to this absurdity, and have reflected so little on the great nicety and precision of speech, which the ancients purposely affected on such subjects as these.

Isidore has an observation, (founded on something which he met with in Servius, who quoted it himself from Sallust,) which is just as true of these distinctions among the Greeks as among the Latins [f]: Constat autem post factum mundum ex qualitate cursus solis tempora in ternos menses fuisse divisa. quorum temporum talem veteres discretionem faciunt, ut primo mense ver *novum* dicatur, secundo *adultum*, tertio *præceps.* sic et æstas in suis tribus mensibus *nova adulta* et *præceps.* item hyems *nova adulta* et *præceps* sive *extrema.* The distinctions which corresponded to these in Greek were, that of the *ἀρχόμενος* or *ἱστάμενος*, to the *novus,* that of the *μέσος*, *μεσῶν*, or *ἀκμάζων*, to the *adultus*, that of the *ἄκρος*, *λήγων*, or *τελευτῶν*, to the *præceps.* Every division of the year, in the Greek calendar, whether it consisted of three months or not, was capable of being thus distinguished; and may be observed to be so distinguished. As to the spring in particular; it was the most capable of

[f] Origines, v. 35. 41 F. Cf. our Origines Kal. Ital. iii. 466: Serv. ad Georg. i. 43: Æn. i. 430: iii. 8: v. 295.

them of all: being ordinarily reckoned at three months, from the Ζεφύρου πνοὴ to the Πλειάδων ἐπιτολή. And this, in our opinion, is intimated by a definition of spring, without reference to any particular calendar, which appears in Hesychius—Ὁ μετὰ χειμῶνα τριμηνιαῖος καιρός.

iv. Rule of the invasions of Attica by the Peloponnesians, for the first seven years of the War.

This brings us to the consideration of another criterion of the time of the attempt on Platæa; supplied by the date of the first actual invasion of Attica after it: Ἐπειδὴ μέντοι προσβαλόντες τῇ Οἰνόῃ καὶ πᾶσαν ἰδέαν πειράσαντες οὐκ ἐδύναντο ἑλεῖν, οἵ τε Ἀθηναῖοι οὐδὲν ἐπεκηρυκεύοντο· οὕτω δὴ ὁρμήσαντες ἀπ' αὐτῆς μετὰ τὰ ἐν Πλαταίᾳ τῶν ἐσελθόντων Θηβαίων γενόμενα ἡμέρᾳ ὀγδοηκοστῇ μάλιστα, τοῦ θέρους καὶ τοῦ σίτου ἀκμάζοντος, ἐσέβαλον ἐς τὴν Ἀττικήν[g].

We have an account after this of similar invasions, year by year, on five successive occasions, with the exception of one year only, the third of the War, taken up by the siege of Platæa: and it appears from them all that the rule of the Peloponnesians was to enter the territory of Attica just as the corn was coming to maturity, and to stay there as long as the means of subsistence were to be found; and then to return to their own homes, in time generally speaking for their own harvest, even after that of Attica had long been over. That this course of proceeding was something regular, and had been traditionally handed down accordingly, may be inferred from the following allusion to it by Demosthenes, for the purpose of contrasting the kind of warfare which their forefathers had to sustain, with that which was waged in his own time[h]: Πρῶτον μὲν γὰρ ἀκούω Λακεδαιμονίους τότε καὶ πάντας τοὺς Ἕλληνας τέτταρας μῆνας ἢ πέντε, τὴν ὡραίαν αὐτὴν, ἐμβαλόντας ἂν καὶ κακώσαντας τὴν τῶν ἀντιπάλων χώραν ὁπλίταις καὶ πολιτικοῖς στρατεύμασιν, ἀναχωρεῖν ἐπ' οἴκου πάλιν. This is no doubt a correct description of the rule of proceeding, as long as the Peloponnesians continued to invade Attica one year after another; but it supposes them to have staid much longer on each of these occasions, and to have devoted a much larger portion of the spring and summer of the natural

g ii. 19. h ix. 58, Contra Philipp. iii: cf. 62.

year to each of these invasions, than there is any proof that they actually did, before B. C. 413 at least.

Now the next of these occasions after the first, was B. C. 430, the second year of the War[i]. No distinct mention of harvest occurs at this time: but it is implied in chapter 57; and in cap. 47 compared with 55. The length of their stay on this second occasion was forty days; longer than on any except the fourth[k]. The third was that of B. C. 428, the fourth year of the War[l]. That too took place *ἅμα τῷ σίτῳ ἀκμάζοντι*; and they staid then also as long as they could find the means of supporting themselves: yet it appears[m] that even after their return home their own harvest had still to begin. The fourth invasion was made B. C. 427, in the fifth year of the War[n]. And though the harvest is not distinctly mentioned on this occasion, it is implied in the *εἴ τι ἐβεβλαστήκει*[n], which comes in historically, and by the length of their stay in the country, (which for a particular reason, connected with the revolt of Lesbos, was greater on this occasion than on any but the second,) and by the reason of its termination at last, *ὅτι ἐπελελοίπει ὁ σῖτος*—the grain, the produce of the country on the spot, had all been consumed. The fifth occasion was that of B. C. 425, the seventh year of the War[o]: and this also took place *ὑπὸ τοὺς αὐτοὺς χρόνους τοῦ ἦρος* (i. e. *περὶ σίτου ἐκβολὴν*[p]), but *πρὶν τὸν σῖτον ἐν ἀκμῇ εἶναι*: and its precise time is defined in the following description of the straits to which the army was reduced, before it was brought to a close[q]. *Ἅμα δὲ πρωῒ ἐσβαλόντες καὶ τοῦ σίτου ἔτι χλωροῦ ὄντος ἐσπάνιζον τροφῆς τοῖς πολλοῖς, χειμών τε ἐπιγενόμενος*[r] *μείζων παρὰ τὴν καθεστηκυῖαν ὥραν ἐπίεσε τὸ στράτευμα*: owing to which causes, and also to the occupation of Pylus[s], their stay was cut short on this occasion, and lasted only fifteen days. After this we read of no more invasions of the Attic territory until the 19th year of the war, B. C. 413, when Dekeleia was permanently occupied[t].

The mode of warfare then, adopted by the Peloponnesians, and the rule of their proceedings, for the first seven years at least, is sufficiently clear. They entered Attica as the corn was becoming ripe; they staid in the country, subsisting on

[i] ii. 47. [k] iii. 26. [l] iii. 1. [m] iii. 8. 15. [n] iii. 26. [o] iv. 2.
[p] cf. iv. 1. [q] iv. 6. [r] iv. 3. [s] iv. 3–5. [t] vii. 19.

the corn, as long as it lasted. Every year therefore they must have invaded it much about the same time; because every year too the corn must have been coming to maturity about the same time. In one year only, B. C. 425, does it seem to have been otherwise; partly because the invasion that year took place somewhat earlier than usual, partly because the season itself was backward, and the grain was merely ἐν ἐκβολῇ (shooting into ear *) when it ought to have been getting ripe; consequently was unfit for the food of man, though it might have supplied fodder for cattle.

Suppose then no more to be known of this method of proceeding than thus much; viz. that the Peloponnesians from the first made a practice of invading Attica at a set time in the natural year, viz. when the corn was beginning to ripen: but that on one occasion, the invasion itself having happened to be somewhat earlier than usual, and the season itself to be somewhat more backward than usual, they encountered bad weather, and were unable to find subsistence in the country for more than *fifteen* days: let us see how this will consist with the two states of the case, between which we have to decide, with respect to the date of the first invasion of all; *one*, which assumes it a certain length of time from the end of the month Anthesterion, the other, which dates it the same length of time from the end of the month Munychion.

* Suidas, Σίτου ... καὶ σίτου ἐκβολὴν, Θουκυδίδης ὅταν ὁ στάχυς τῆς κάλυκος ἐκφύηται, οὐχ ὅταν ἐκ τῆς γῆς ἀναδιδῶται τὰ σπέρματα. Cf. Phot. Lex. σίτου ἐκβολή. Hesychius indeed has Ἐκβολὴ σίτου· ὁ σπόρος: and Σίτου ἐκβολή· ἡ πρώτη ἔκφυσις τῆς χλόης. Cf. in Στάχυς· καὶ τῆς σιτηρεσίας ἡ ἔκφυσις. Nor can it be denied that this too is a possible sense of the phrase. But it is not its meaning in this particular instance. Cf. the Scholia on the place, iv. 1: Σίτου ἐκβολὴν τὴν τῶν σταχύων ἐκ τῶν καλύκων γένεσίν φησιν· ἐπιφέρει γὰρ, ὑπὸ τοὺς αὐτοὺς χρόνους τοῦ ἦρος· ἦρος δὲ στάχυες ἐκφύονται· ἤγουν ὅτε ὁ στάχυς δημιουργεῖται, καὶ ἤδη προβάλλεται, .. ἔχων τὸν κόκκον τοῦ σίτου διατετυπωμένον, οὔπω δὲ εἰς ἀκμὴν προαχθέντα. Cf. also Pollux, i. vii. 40. § 61.

The grammarians called this stage in the process of the ripening of the corn, καῦστις or ἀμφικαῦστις: probably because when the ear was in that state, though still green, it was usual to parch or roast it, and so to eat it. Cf. the Scholia on Aristophanes, ad Equites, 1233. εὔστραις. See Hesychius, ἀμφικαῦστις: καῦστις: κέστρος: Etym. M. ἀμφικαῦστις: Photii Lexic. p. 134. κάσις (corr. καῦσις).

In either case, this distance of time is 80 days: but as dated from the end of Anthesterion, March 7, these 80 days will extend down to May 26; as dated from that of Munychion, May 5, they will reach down to July 24. On either supposition then the corn was only coming ripe at the time of the first invasion; and on either supposition the invasion was repeated at the same time in general and under the same circumstances in general every year: until at length, in the seventh year of the war, and on the occasion of the sixth invasion of the country, partly because it was somewhat earlier than usual, partly because the season was later than usual, the corn, though already in the ear, was still green; the weather was colder, and more like winter than spring; and for both these reasons they were forced to cut short their stay. We would demand of any person of common sense whether such a state of the case as this would be possible, much less probable, of any year, for the climate of Attica, on or about July 24? a month after the summer solstice. Not so, however, on the other hypothesis of an invasion and occupation of the country, in the first instance, on or about May 26, and in every other year much about the same time. If the corn in Attica, even in the best of years, was seldom ripe for the sickle on a large scale before May 26; it might happen, in some one instance (as it must actually have done in this of B. C. 425), partly from the backwardness of the season, partly because the invasion was earlier than usual, that both bad weather and scarcity were encountered, in the very same climate and at the very same time of the year, at which both good weather and plenty had been met with in former years. But this brings us at once to the consideration of another important question, in the further prosecution of our argument; viz. that of the usual time of corn-harvest in Attica, and in other parts of Greece.

v. On the usual time of Corn-harvest in Attica, and in other parts of Greece.

On this question then we observe first of all, That though the season of harvest could not be the same for every climate in Greece, and though, when Aratus was writing his poetical description of the sphere, he must have been himself in some quarter where the length of the longest day was *fifteen* hours and that of the shortest night was *nine*[v]—and though this state of the case in that respect would be suitable to the parallel of Macedonia or of the Hellespont, for the climate of the latter of which, as Theophrastus tells us[x], harvest was a month later than in Attica; yet in that very description of the sphere he gives us to understand there was no climate of Greece, no parallel of latitude, known to him, for which the harvest was not already over, and the fields already cleared of their produce, a month after the summer solstice: i. e. by the time of the ingress of the sun into Leo.

> *Πᾶσαι δ' ὑπ' ἀμφοτέροισι Λέων ὑπὸ καλὰ φαείνει,*
> *ἔνθα μὲν ἠελίοιο θερείταται εἰσὶ κέλευθοι·*
> *αἱ δέ που ἀσταχύων κενεαὶ φαίνονται ἄρουραι*
> *ἠελίου τὰ πρῶτα συνερχομένοιο Λέοντι*[y].

B. C. 431, the true summer solstice fell out June 28; and the sun would enter Leo July 29. In the calendar of Meton both the summer solstice and the ingress into Leo were dated one day earlier, June 27 and July 28 respectively; the latter only four days later than July 24, the very time when, according to the usual construction of the date of the first invasion of Attica, 80 days after the end of Munychion, May 5, the corn and the summer were both just *coming to maturity*: Τοῦ θέρους καὶ τοῦ σίτου ἀκμάζοντος*. On this

* The use of this term *ἀκμάζοντος*, applied both to the summer and the harvest, is itself remarkable. The Etymologicon observes of *ἀκμή*· *Σημαίνει δὲ τρία· τὴν ὀξύτητα τοῦ βέλους, καὶ τὸ μέσον τῆς ἡλικίας, καὶ τὸ μέσον τοῦ καιροῦ· ὡς τό· Θέρους ἦν ἀκμή.* Ἀκμάζειν is properly to be coming to an *ἀκμὴ*, but not yet come. The *initium* æstatis in the calendar of the time being dated May 6, with the heliacal rising of the Pleiads—after this time, the description of *θέρος ἀκμάζον* might be applied with propriety to any part of the interval, from May 26 to the summer solstice, June 27. After the summer solstice, the proper mode of describing the season would be different. It must be *θέρους μεσοῦντος*, or *θέρους λήγοντος*, *pro re nata*. It could no longer be *θέρους ἀκμάζοντος*, or as the poets would express it, *θέρους αὐξομένου*, at least. Thucydides is not inattentive to this distinction. For example, speaking of the time of the departure of the expedition to Sicily, B. C. 415,

[v] Phænomena, 497. 507–510. Cf. the Schol. in loc., and the Cod. Mosq. ad 497–509.

[x] Histor. Plantar. xviii. 2. pag. 260. 10.

[y] Phænomena, 148.

principle, the corn was just coming to maturity, but not yet come, a month after the time when for every climate of Greece, according to ordinary experience and observation, it must not only have been ripe, but already carried and housed.

In the next place, with regard to the date of the harvest in Attica; we have seen that the stated date of the Thargelia (an annual thankoffering of the fruits of the ground, then coming to maturity) was the 6th of Thargelion: and in this respect the 6th of the Attic Thargelion exhibited a striking analogy to the 16th of the Jewish Nisan; each being the date in its proper calendar of the same kind of eucharistic offering every year. The Julian date of the 6th of Thargelion in the first year of the cycle of Solon was always May 22; and that may be considered its normal or proper date. But it made little difference to the ceremony attached to this day, whether the day itself fell earlier or later, within certain limits at least. There were parts of the Attic territory in which *ἀπαρχαὶ* might be found, in a state to be presented on the 6th of Thargelion, even in the earliest years of the cycle, when it fell on April 30; for instance, Salamis [z]: just as in Judæa ripe corn for the offering of the wavesheaf on the 16th of Nisan might always be found about Jericho, however early the 16th of Nisan itself might fall. In this present year, B. C. 431, the 6th of Thargelion was falling about its average time, May 11; and if the corn any where in Attica was already fit to be offered at the Thargelia, on that day, who can doubt that 15 days after, May 26, it must have been very generally approaching to maturity?

Again, the lines of Hesiod, in which he defines the season of harvest for his own time, are well known:

he describes it in the following terms: *Μετὰ δὲ ταῦτα, θέρους μεσοῦντος ἤδη, ἡ ἀναγωγὴ ἐγίγνετο ἐς τὴν Σικελίαν*: vi. 30. Now it is capable of proof, as we hope to see hereafter, that the precise day of the departure was the first of Hecatombæon, July 7 that year, the first day of the official year of Chabrias; ten days indeed later than the Metonic date of midsummer day, June 27, but 17 days earlier than this supposed date of the first invasion of the Peloponnesians, July 24, B. C. 431.

[z] Theophrastus, H. Pl. viii. 2. 260, 261.

> Πληϊάδων Ἀτλαγενέων ἐπιτελλομενάων
> ἄρχεσθ' ἀμητοῦ, ἀρότοιο δὲ δυσομενάων·
> αἳ δή τοι νύκτας τε καὶ ἤματα τεσσαράκοντα
> κεκρύφαται, αὖτις δὲ περιπλομένου ἐνιαυτοῦ
> φαίνονται, τὰ πρῶτα χαρασσομένοιο σιδήρου [a].

For the parallel therefore of Ascra in Bœotia (38°), little more to the north than that of Attica (37° 58′ N.) reaping time was dated with the heliacal or early rising of the Pleiads, and seed time with the cosmical or late setting: the forty nights and days of concealment before this early rising, here alluded to, being the interval between the cosmical rising, when the Pleiads were in conjunction with the sun, and rising with the sun, and therefore invisible—and their first appearance in the morning twilight, rising before the sun. This first appearance under such circumstances was the signal, according to Hesiod, for whetting the sickle, or getting ready for reaping the harvest; implying that the corn was now ripe, but not yet cut: and from another allusion which occurs in his Works and Days, both to this appearance, and to this same preliminary, consequent upon it, of sharpening the sickle—it is clear that it must always have fallen out in one of the summer months of the calendar, properly so called; like Thargelion, the first of them all.

> Ἀλλ' ὁπότ' ἂν φερέοικος ἀπὸ χθονὸς ἂν φυτὰ βαίνῃ
> Πληϊάδας φεύγων—τότε δὴ σκάφος οὐκέτι οἰνέων·
> ἀλλ' ἅρπας τε χαρασσέμεναι καὶ δμῶας ἐγείρειν,
> φεύγειν δὲ σκιεροὺς θώκους καὶ ἐπ' ἠῶ κοῖτον,
> ὥρῃ ἐν ἀμήτου, ὅτε τ' ἠέλιος χρόα κάρφει [b].

The earliest authority for these natural criteria of seed time and harvest time so far would be the poet Hesiod; but the criteria and distinctions themselves were regularly recognised and repeated by all who came after him, and treated of the same subjects: Ὧραι δὲ τοῦ σπόρου τῶν πλείστων δύο· πρώτη μὲν καὶ μάλιστα ἡ περὶ Πλειάδων δύσιν, ᾗ καὶ Ἡσίοδος ἠκολούθηκε, καὶ σχεδὸν οἱ πλεῖστοι· διὸ καὶ καλοῦσί τινες αὐτὴν ἄροτον. ἄλλη δ' ἡ ἀρχομένου τοῦ ἦρος*, μετὰ τὰς τροπὰς τοῦ

* Here it is observable, spring begins immediately or soon after the winter solstice.

[a] Opera et Dies, 381. [b] 569.

χειμῶνος[c]—Hesiodus, qui princeps omnium de agricultura scripsit, unum tempus serendi tradidit a Vergiliarum occasu. scribebat enim in Bœotia Helladis, ubi ita seri diximus[d]—Duæ sunt (cœlestes injuriæ) præter lunares, paucisque cœli locis constant. namque Vergiliæ privatim attinent ad fructus, ut quarum exortu æstas incipiat, occasu hiems, semestri spatio inter se messes vindemiasque et omnium maturitatem complexæ[e].

> Αὐτὸς γὰρ τάδε σήματ' ἐν οὐρανῷ ἐστήριξεν,
> ἄστρα διακρίνας· ἐσκέψατο δ' εἰς ἐνιαυτὸν
> ἀστέρας οἵ κε μάλιστα τετυγμένα σημαίνοιεν
> ἀνδράσιν, ὡραίων ὄφρ' ἔμπεδα πάντα φύωνται[f].

On which the Scholiast[g]: Ἐθέλει δὲ τὰς ἀνατολὰς αὐτῶν καὶ τὰς δύσεις δηλῶσαι· οἷον Πλειάδων ἐπιτολὴν ἀρχὴν θέρους γίνεσθαι· δύσιν δὲ ἑῴαν ἀρχὴν χειμῶνος . . . τὸ δὲ ἐσκέψατο, ἀντὶ τοῦ ἐφρόντισεν, ὡς ἑκάστου μέρους ἐνιαυτοῦ σημεῖον εἶναι· οἷον Πλειάδας ἀρότου καὶ ἀμήτου, κύνα θέρους[g].

> Αἳ μὲν ὅμως ὀλίγαι καὶ ἀφεγγέες, ἀλλ' ὀνομασταὶ
> ἦρι καὶ ἑσπέριαι, Ζεὺς δ' αἴτιος, εἱλίσσονται,
> ὅς σφισι καὶ θέρεος καὶ χείματος ἀρχομένοιο
> σημαίνειν ἐκέλευσεν, ἐπερχομένου τ' ἀρότοιο[h].

Which Festus paraphrases thus:

> Nam si se gurgite tollunt
> Vergiliæ, curvas in flava novalia falces
> Exercere dies: si condunt æquore flammas
> Tellurem presso proscindere tempus aratro[i].

Σημαίνουσιν αἱ Πλειάδες καιρούς· ἑῴαν γὰρ ἀνατολὴν ἀνατέλλουσαι σημαίνουσι θέρους ἀρχήν· ἑῴαν δὲ δύσιν δύνουσαι ἀντίληψιν τῶν κατὰ σπόρον ἔργων . . . . ἐπιτελλομένων γὰρ τοῦ ἀμήτου ἄρχεσθαι χρή· δυομένων δὲ τοῦ ἀρότου[k]—Eas stellas Vergilias nostri adpellaverunt, quod post ver exoriuntur. et hæ quidem ampliorem ceteris habent honorem, quod in earum signo exoriente sole æstas significatur, occidente autem hiems ostenditur: quod aliis non est traditum signis[l]—Πρὸς δὲ τοῖς εἰρημένοις καὶ ὁ τῶν Πλειάδων χορὸς ἀστέρων ἑβδομάδι συμπε-

[c] Theophrastus, De Frumento, Histor. Pl. viii. i. 254, 2. cf. 4. 266. 6.
[d] Pliny, H. N. xviii. 56. p. 180: cf. 10. § 1: 59. p. 196.
[e] Ibid. 69. § 2. p. 235.
[f] Aratus, Phænomena, 10.
[g] Cod. Mosq. p. 270. Cf. Theon, ad vers. 10.
[h] Phænomena, 264.
[i] Aratea Phæn. 614: cf. Germanicus Cæsar, Aratea Phæn. 265.
[k] Scholia in Aratum, 264: cf. Cod. Mosq. p. 283, 284: ad 264.
[l] Hyginus, Poet. Astron. xxi. Taurus.

πλήρωται, ὧν αἱ ἐπιτολαὶ καὶ αἱ ἀποκρύψεις μεγάλων ἀγαθῶν αἴτιαι πᾶσι γίνονται· δυομένων μὲν γὰρ αὔλακες ἀνατέμνονται πρὸς σπόρον· ἡνίκα δ' ἂν μέλλωσιν ἐπιτέλλειν ἀμητὸν εὐαγγελίζονται, κ', τ. λ.[m]—Οἷον καὶ ἐπὶ Πλειάδων. ὅταν γὰρ αὐταὶ ἀνατέλλουσι τὴν ἑωθινὴν ἀνατολὴν τῷ πρωῒ, κατὰ Μάϊον μῆνα, εἰς τὴν ιβ' καὶ εἰς τὴν ιγ', τότε δὴ ἄρχεσθαι τοῦ ἀμήτου ἢ τοῦ θέρους· καὶ πάλιν μελλουσῶν δῦναι ἢ κρυβῆναι τὴν ἑσπερίαν δύσιν, ἤτοι τὸ Ὀκτώβριος ἢ Νοέμβριος, ποιεῖν ἀρχὴν ἀρότου ἢ τοῦ σπείρειν[n]—

> Ὡράων πισύρων νοέων δρόμον· ἱσταμένην δὲ
> νύσσαν ὀπιπεύων φθινοπωρίδα τοῦτο βοήσω·
> Σκορπίος[o] ἀντέλλει βιοτήσιος· ἔστι δὲ κῆρυξ
> αὔλακος εὐκάρποιο· βόας ζεύξωμεν ἀρότρῳ·
> Πληϊάδες δύνουσι· πότε σπείρωμεν ἀρούρας;
> αὔλακες ὠδίνουσιν ὅτε δρόσος εἰς χθόνα πίπτει
> λουομένην Φαέθοντι[p]—

Αἱ δὲ Πληϊάδες Πληϊόνης τῆς Ὠκεανοῦ καὶ Ἄτλαντος, ὡς μέν τινες ἀπὸ τῆς μητρὸς ἔσχον τὴν ἐπωνυμίαν· ἢ μᾶλλον παρὰ τὸν πλειῶνα, ὅ ἐστιν ἐνιαυτός· σημαντικαὶ γὰρ αὗται καὶ χειμῶνος καὶ θέρους[q]—Πελειάδας δὲ ὁ ποιητὴς καλεῖ νῦν τὰς Πλειάδας, πρὸς ἃς σπόρος τε καὶ ἄμητος, καὶ τῶν καρπῶν ἀρχὴ γενέσεως καὶ συναιρέσεως[r]—Δῆλον δὲ τὸ τῶν Πελειάδων ἤτοι Πλειάδων ἀξίωμα καὶ παρὰ τῇ Βυζαντίᾳ Μοιροῖ, ἐν τῷ

> Ζεὺς τρήρωσι Πελειάσιν ὤπασε τιμὴν,
> αἳ δή τοι θέρεος καὶ χείματος ἄγγελοί εἰσι[s]—

Χείρων ὁ Ἀμφιπολίτης, Ἀλεξάνδρου τοῦ Μακεδόνος ἐρωτήσαντος... περὶ τῶν Πλειάδων εἶναι τὸν λόγον ἔφη...ὡς δὲ ἡμεῖς, φησὶ, Πελειάδων ἤτοι Πλειάδων ἐπιτελλουσῶν ἀρχόμεθα θερίζειν, οὕτω καὶ θεοὶ τὴν ἀμβροσίαν κομίζεσθαι[t]—Αἱδὶ μέν σοι Πληϊάδες σπόρου τε καὶ ἀμητοῦ ξύμβολα, δυόμεναι ἢ αὖ πάλιν ἐκφανῶς ἔχουσαι[v]—

> Ἀλλ' ἤτοι θέρεος βλαβερὸν δάκος ἐξαλέασθαι,
> Πληϊάδων φάσιας δεδοκημένος, αἵ θ' ὑπὸ Ταύρου
> ὁλκαίην ψαίρουσαι ὀλίζωνες φορέονται[x]—

m Philo Jud. i. 28. l. 17. De Mundi Opificio.

n Schol. in Æschyl. in Prom. 458. Δυσκρίτους.

o Cf. ad xxxviii. 264.

p Nonnus, Dionysiaca, xlii. 284.

q Schol. in Apollon. Rhod. iii. 225-227.

r Asclepiades ὁ Μυρλεανὸς, apud Athen. xi. 79.

s Eustathius, ad Od. M. 62: 1712. 39: cf. Athenæus, xi. 80: Anthologia Græca, i. 135. Myro, iii.

t Ibid. l. 57.

v Philostratus Junior, Icones, Πύρρος ἢ Μυσοί. 849. B. C.

x Nicander, Theriaca, 121: cf. the Schol. in Aratum, 255: Schol. in Pindar. Nemea, ii. 16. Ὀρειᾶν γε Πελειάδων—: Ἢ ὅτι ὅροι εἰσὶ τοῦ ἀμήτου, κ', τ. λ. We are told that Crates proposed to read in this place, θερειᾶν for ὀρειᾶν, ὅτι θέρει ἐπιτέλλουσιν: cf. Athenæus, xi. 80.

The rule of Hesiod, both for seed time and for harvest time, was still continuing in Bœotia in Plutarch's time: *Ἄμπελον ἰσημερίας ἐαρινῆς σκάψας (τις) μετοπωρινῆς ἐτρύγησε· πυρὸν ἔσπειρε δυομένης Πλειάδος, εἶτα ἀνατελλούσης θερίζει* [y]—*Οἱ αὐτοὶ νόμοι πᾶσιν ὑφ' ἑνὸς τάγματος καὶ μιᾶς ἡγεμονίας, τροπαὶ βόρειοι τροπαὶ νότιοι, ἰσημερία, πλειὰς, ἀρκτοῦρος, ὧραι σπόρων, ὧραι φυτειῶν* [z] *—

* The Pleiads, it is well known, were supposed by the ancient Greeks to have been the daughters of Atlas.

Πληϊάδων Ἀτλαγενέων ἐπιτελλομενάων [1].

Ante tibi Eöæ Atlantides abscondantur [2].

Αἱ δ' ἑπτ' Ἄτλαντος παῖδες ὠνομασμέναι
πατρὸς μέγιστον ἆθλον οὐρανοστεγῆ
κλαίεσκον, ἔνθα νυκτέρων φαντασμάτων
ἔχουσι μορφὰς ἄπτεροι Πελειάδες [3].

And as Atlas passed with them for the first astronomer, and the first author of the Sphere [4], and yet as a native of Libya, *from* whom too mount Atlas in Libya derived its appellation, or *to* whom it gave his name; it is manifest that in order to the explanation of the Fables, connected with him and the Pleiads, and more particularly the commonly received one of his supporting the Heavens on his shoulders; something should be known beforehand of the history of the Libyan Sphere—which we have no doubt, like that of every other country or people of antiquity, distinct from Egypt and the Egyptians, was derived from the Egyptians, and probably introduced into Libya by the Libyan Atlas, and probably also some time between the epoch of the first revision of the Sphere among the Egyptians, B. C. 1347, and that of the second, B. C. 848 [5]: the former of which would be more consistent with the traditionary accounts of the Libyan Atlas, than the latter; and in particular with the fact of his having been a contemporary of the Grecian Hercules also. The true age of the Hercules of ancient Greek history, (the contemporary of Atreus, the son of Pelops, and the founder of the Olympic games at least,) as we shall see hereafter, was B. C. 1244.

With respect to the number of the Pleiades, it appears to have been well known to the ancients that seven stars went to the constellation so called, though six only could ordinarily be distinguished; and all being regarded as persons, (the daughters of Atlas, in common,) each had a

y De Amore Prolis, iv.

z De Exsilio, v.

1 Hesiod, Opera et Dies, 381.

2 Virgil, Georg. i. 221.

3 Æschylus, apud Athen. xi. 80. Fragm. 285. Ex incertis Fabb. cf. Phurnutus, xxvi. De Atlante.

4 Cf. Diodor. Sic. iii. 60: iv. 27: Pliny, H. N. ii. 6: Vitruvius, vi. 10. 184.

5 Cf. our Fasti Catholici, iii. 349–420 sqq.

proper name of its own: and these names are often enumerated, though not always alike; the oldest account of them, extant at present, being that of the author of the ἀστρολογία, attributed to Hesiod[6]. With respect to their name, it is sometimes derived from Πληϊόνη, the supposed name of the wife of Atlas, and consequently the mother of the Pleiads[7]: and a curious fable has been handed down respecting Pleïone, the Pleiads, and Orion, which we had occasion to explain in our Fasti Catholici[8]. Sometimes, with more probability *a priori*, ἀπὸ τοῦ πλεῖν; as being that constellation, the first appearance of which in the morning, in the spring or summer quarter, announced the period when the sea was open to navigation on a large scale. *Pleiades*, says Servius[9], signum est ante genua Tauri. sed Pleiades ortu suo primæ navigationis tempus ostendunt. unde Græce Pleiades dicuntur ἀπὸ τοῦ πλέειν. In our opinion however the true explanation of the name is the simple and obvious one; implied in the name itself, and proposed among others, by the Scholiast on the Iliad, *loc. citato*: Ὅτι πλείους ὁμοῦ κατὰ μίαν συναγωγήν εἰσι (βότρυν γὰρ αὐτὰς λέγουσιν)—viz. that this constellation in particular was made up of a number of stars, grouped together in a peculiar manner, unlike any other in the heavens: that they were more than one, yet as it were clustered in one: and *many* being exprest in Greek by πλέος, or πλεῖος, the Pleiads came to be so called παρὰ τὸ πλέας, or πλείας εἶναι. Some of the grammarians derive the name from πλειὼν, as another term for the year[10]; but it is more probable that this name for the year was itself derived from that of the Pleiades. The use of this term, in the sense of the year, is explained by the ancient grammarians of the year, as measured by the cycle of natural production; the year within which all the productions of the ground from the earliest to the latest were raised and ripened in their turn. Πλειὼν ὁ ἐνιαυτὸς, ἀπὸ τοῦ πάντας τοὺς καρποὺς τῆς γῆς συμπληροῦσθαι[11]. And such is the sense in which it is used by Hesiod; the first instance of the occurrence of the word, extant in Greek at present.

Πλειὼν δὲ κατὰ χθονὸς ἄρμενος εἴη[12].

And if this cycle may most reasonably be supposed to have begun and ended every where with seed time; then, while this constellation of the

6 Cf. Scholia in Aratum, Phœn. 255: Tzetzes, in Hesiod. Opp. et Dies, 382. pag. 206: Scholia in Pindar. ad Nemea ii. 16: Proclus in Hesiod. Opp. et Dies, 382. p. 205: Athenæus, xi. 79, 80: Schol. in Theocritum, xiii. 25: Servius ad Georg. i. 138: Hyginus, Fabb. cxcii. Hyas: Poët. Astron. xxi.: Ovid. Fasti, iv. 165 sqq.

7 Cf. ad note 6: Hesychius, Πληϊάδες: Schol. in Iliad. Σ. 486: Schol. in Apollon. Rhod. iii. 225–227: Athenæus, xi. 79. cf. 80.

8 Vol. iv. 180 *n*. cf. Etym. Mag. Πλειάς.

9 Ad Georg. i. 138.

10 Cf. the Scholia in Iliad. Σ. 486. loc. cit.: Apollonius Rhod. iii. 225–227, &c.

11 Hesychius, in voce. cf. Suidas, Πλειών.

12 Opp. et Dies, 615. It is no objection to this view of the original and proper meaning of the term, that it is used in later authors as simply synonymous with ἐνιαυτός.

Εἰς πέντε μὲν πλειῶνας ἱμείρων λέχους.
Lycophron, 201.

Ψαῦσαι μέγαν πλειῶνα καὶ πεφευγότα.
Ibid. 1039.

Οἱ δὲ τὰ μὲν πλειῶνι, τὰ δ' οὐχ ἑνί.
Callimachus, Hymn. in Jovem, 89.

Pleiads was still to be observed every where, in Greece, setting in the morning as the sun was rising, at the same period of the natural year, the annual cycle of production was *de facto* that of this phenomenon. The year of production was the year of the Πλειάδες—and the year of the Πλειάδες (the year of the Πλέαι or Πλεῖαι) would be properly denoted by πλειών: and πλειὼν, while denoting primarily the year of the Pleiads, would denote secondarily the year of production. This seems to be the true explanation of the meaning of this term, as applied to the year. It is so explained by the Etym. Magnum;—Πλειάς: Σημαντικαὶ δὲ καὶ θέρους καὶ χειμῶνος αὗται . . καὶ πλειὼν ἐξ αὐτῶν ὁ ἐνιαυτὸς, οἷον ὁ πλήρης χρόνος . . καὶ γὰρ αἱ Πλειάδες σήμαντικαί εἰσι τοῦ ἐνιαυτοῦ. δύνουσαι μὲν γὰρ τὴν ἀρχὴν τοῦ ἐνιαυτοῦ δηλοῦσιν, ἀνατέλλουσαι δὲ τὸ τέλος [13]—where the beginning and the end of the year can be understood of nothing but the beginning and the end of the year, of which we are speaking; the year defined and limited by the cycle of natural production.

The name of Πελειάδες, which occurs only in the poets, is simply a poetical form of Πλειάδες [14]. It would be a mistake to derive it from πέλεια or πελειὰς, the name of the wood-pigeon in Greek; though πέλειαι occurs also in the poets, applied to the Pleiads. The Latin name of this constellation is Vergiliæ; and the first element in that name is evidently *ver*, the Latin for spring. The name is explained accordingly, from the rising of this constellation in the spring. Vergiliæ dictæ quia eorum ortu ver finitur et æstas incipit [15]—Latine Vergiliæ, a verni temporis significatione quo oriuntur [16]—Eas stellas Vergilias nostri appellaverunt, quod post ver exoriuntur [17]—Pleiadas a pluralitate Græci vocant. Latini, eo quod vere exoriuntur, Vergilias dicunt [18]—Has Latini Vergilias dicunt, a temporis significatione, quia vere exoriuntur. nam occasu suo hyemem, ortu æstatem, primæque navigationis tempus, ostendunt [19].

With regard to the dates of the rising and setting of the Pleiads, to which the ancients ascribed this peculiarity of dividing the natural year, and marking the beginning of seed time and that of harvest time respectively; for as much as in the nature of things they must have been different not only for different climates and parallels of latitude, but even for

13 Cf. the Anecdota Græca Oxon. ii. 252. 12–21. Chœroboschi Orthographia.

14 Athenæus, xi. 79. 80: Hesiod. Fragm. xliv. cx.: Scholia ad Hesiod. Opp. et Dies, 381, 382: Schol. ad Il. Σ. 486. also Eustathius, ad Il. Λ. 635. 869. 41: Σ. 485. 1155. 40: ad Od. M. 62–64. 1712. 34, 1713. 9.

15 Festus, xix. xx.

16 Servius ad Georg. i. 138.

17 Hyginus, Poet. Astron. i. 21. cf. ii. xx. Taurus.

18 Schol. in Germanici Cæsaris Aratea Phænomena, 265. Cf. Vitruvius, vi. 10. 184.

19 Isidore, Origg. iii. lxx. 30. H. Cf. De Natura Rerum, xxvi. 255. C. This commonly received etymology of the Latin name in question however is only half complete. It explains the *ver*, but it leaves the *giliæ* unexplained. And yet the name itself, on this principle, must have denoted the spring-*giliæ*—and *giliæ* must in reality have been the true name of this constellation in Latin. What then was the meaning of this other element, in the name of Ver-giliæ? No answer can be returned to that question from testimony *ab extra*; though it might perhaps be answered conjecturally.

the same at different times—it is no wonder that they are found to be differently represented.

Ἰστέον δὲ ὡς ἡ ἑῴα ἀνατολὴ τῶν Πλειάδων γίνεται ἀπὸ Μαΐου (ιγ′) ἑὼς κγ′ τοῦ Ἰουνίου· ἡ δὲ ἑσπερία ἀνατολὴ ἀπὸ Ὀκτωβρίου μέχρι Δεκεμβρίου ιθ′ . . . ἑῴαν δὲ ἐπιτολὴν ποιοῦνται ἐφ' ἡμέρας πεντήκοντα δύο τῆς ἐαρινῆς ἰσημερίας (ὅτε) καὶ ὁ ἥλιός ἐστι μοιρῶν ιζ′ ἐν Ταύρῳ· καὶ τὴν ἑσπερίαν δὲ ἐφ' ἡμέρας τοσαύτας τῆς φθινοπωρινῆς ἰσημερίας, ἡλίου ὄντος ἐν Τοξότῃ[20]. The date of the autumnal equinox, according to these Scholia[21], was Thoth 25 = Sept. 22: 52 days from which give the cosmical setting of the Pleiads Nov. 13, two days later than its date in the Julian calendar. In like manner, 52 days from May 13 backwards give the date of the vernal equinox March 22. And May 13 = (May 11 B. C. 45) was the date of the heliacal rising of the Pleiads in the calendar of Cæsar[22]—*Πληϊάδων δὲ ἀνατολὴ ἑῴα ἡλίου ὄντος ἐν Διδύμοις, δύσις δὲ ἑῴα κατὰ τὴν διάμετρον, ἡλίου ὄντος ἐν Σκορπίῳ. Ταύρου δὲ ὄντος (σὺν) ἡλίῳ (ἐν Ταύρῳ δὲ ὄντος ἡλίου) κατὰ τὸ εἰκὸς ἑκατέρωθεν ἐπίφασις γίνεται. καὶ γὰρ τὸν προανατέλλοντα Κριὸν ἐπὶ ε′ ἡμέρας προκαταλάμπει (προκαταλαμβάνει) κατ' ἀρχὰς ἐγγὺς ὢν αὐτοῦ, καὶ τοὺς προανατέλλοντας Διδύμους ἐπ' ἄλλας ἡμέρας ε′ . . . διὰ τοῦτο καὶ Ἡσίοδος ἔφη Αἶ δή τοι κ᾽, τ. λ.*[23]—*Τούτων οὖν τῶν Πλειάδων ἐπιτελλουσῶν ἄρχεσθαι κελεύει τοῦ ἀμητοῦ. ἐπιτέλλουσι δὲ ὅταν πρῶτον φαίνωνται πρὸ τοῦ ἡλίου τῆς ἀνατολῆς. ἐπιτολὴ γάρ ἐστιν αὐτῶν ἑῴα μὲν ἡ πρώτη πρὸ τῶν ἡλιακῶν αὐγῶν ἔμφασις· ἑσπερία δὲ ἡ μετὰ τὰς καταδύσεις εὐθὺς ἀνατολή. δύσις δὲ ἑῴα μὲν ἡ πρὸ τῶν ἀνατολῶν ὀλίγον εἰς τὸν δυτικὸν ὁρίζοντα ἄφιξις, ἑσπερία δὲ ἡ κατὰ τὰς καταδύσεις τοῦ ἡλίου εὐθὺς κατάδυσις*[24]—*Πληϊάδων ἑῴα ἀνατολὴ ὅταν ὁ ἥλιος ᾖ ἐν Ταύρῳ· δύσις δὲ ἑῴα ὅταν ὁ ἥλιος ᾖ ἐν Ζυγῷ*[25] . . . *ιβ′ ὥρας τῆς νυκτὸς προανατέλλουσι τοῦ ἡλίου, κατὰ τὴν ἀνατολὴν, μετὰ παρέλευσιν τοῦ Ταύρου, ἤτοι μηνὸς Μαΐου . . . ιβ′ δὲ ὥρας τῆς νυκτὸς πρωϊναὶ δύσεις ἐν τῷ μεταξὺ τοῦ Ζυγοῦ καὶ τοῦ Σκορπίου, ἤτοι Ὀκτωβρίου καὶ Νοεμβρίου μηνὸς, ὅτε ὁ σπόρος—Εἰ μὲν ἄροτον τὸν νεατόν φησιν, . . . Ἰουνίου ε′ (κ᾽, κ′)· εἰ δὲ ἄροτον τὸν σπόρον φησὶ, τὸν καιρὸν δηλοῖ καθ' ὃν ὁ ἥλιος εἰς τὸν Σκορπίον ἐμβάλλει, Ὀκτωβρίου καὶ Νοεμβρίου· αἵτινες Πλειάδες Μαΐου μηνὸς μετὰ τὴν ιγ′ ἐν τῷ Ταύρῳ κείμεναι προανατέλλουσι τοῦ ἡλίου, αὐτοῦ τοῦ ἡλίου μετὰ τὴν κ(ε′) τοῦ Ἰουνίου ἐν τοῖς Διδύμοις ὄντος. δύνουσι δὲ αὗται κατὰ τὴν ιγ′ τοῦ Νοεμβρίου μηνὸς, τοῦ ἡλίου μετὰ τὴν κ(ε′) τοῦ Δεκεμβρίου μηνὸς ἐν τῷ Τοξότῃ ὄντος*[26]—

Αὐτὰρ ἐπὴν δὴ
Πληϊάδες θ' Ὑάδες τε τό τε σθένος Ὠρίωνος
δύνωσιν, τότ' ἔπειτ' ἀρότου μεμνημένος εἶναι
ὡραίου· πλειὼν δὲ κατὰ χθονὸς ἄρμενος εἴη[27].

[20] Scholia in Aratum, v. 254. Cf. the Cod. Mosq. 283, 284.

[21] Ad v. 513.

[22] Ovid, Fasti, v. 599. Cf. Pliny, H. N. xviii. 66. § 1. 69. § 3: and ad xvi. 42: Varro, De Re Rustica, i. 28.

[23] Schol. ad Iliad. Σ. 486.

[24] Proclus, ad Hesiod. Opp. et Dies, 381.

[25] Ibid. ad 382.

[26] Ibid. cf. ad 569. and Moschopulus, p. 279. Tzetzes (ad v. 381.) dates the early rising from May 9 to June 23, the late setting from October 8 to December 9. The beginning of harvest he twice dates in June, ad v. 381. p. 210.

[27] Hesiod, Opera et Dies, 612. cf.

Mr. Ideler, assuming the age of Hesiod about B. C. 800, calculated the late setting of the Pleiads for his time and the parallel of Ascra, Nov. 3; that of the Hyads Nov. 7; that of Orion Nov. 15: for Hesiod's true time these dates would require to be raised one day at least. On his precept or direction to the husbandman

γυμνὸν δὲ βοωτεῖν[28]

Proclus' comment is, Ἢ *τὸ ἀροτριᾷν—ἢ τὸ βοῦς βόσκειν*—Moschopulus' is, Ἤγουν *βοηλατεῖν*. This word is derived from Βοώτης; and Hesychius tells us[29] that Βοώτης was one of the names of Orion, as well as of Arcturus, and that *βοωτεῖν* among the Lacedæmonians denoted *ἀροτριᾷν*, because seed time began when Orion was setting: and the scholiast on the Odyssey, understanding Boötes of Arcturus, observes[30], *Βοώτης δὲ λέγεται ὅτι κατὰ τὴν ἐπιτολὴν αὐτοῦ βοηλατοῦσι καὶ ἀροτριῶσι*: i. e. early in September, with the earliest beginning of the ploughing season. *Εἰ δὲ τὸν σπόρον θελήσεις εἰπεῖν*, (i. e. seed time properly so called) *τὸν Ὀκτώβριον φήσεις καὶ Νοέμβριον*[31]. The *ἄροτος* or *σπόρος ἁπλῶς* indeed is always to be understood of that which coincided with the setting of the Pleiads: *Βλαστάνει δὲ ἅμα Πλειάδι καὶ τοῖς πρώτοις ἀρότοις*[32]: which was also the beginning of the rainy season: *Ἐπειδὰν γὰρ ὁ μετοπωρινὸς χρόνος ἔλθῃ, πάντες που οἱ ἄνθρωποι πρὸς τὸν θεὸν ἀποβλέπουσιν, ὁπότε βρέξας τὴν γῆν ἀφήσει αὐτοὺς σπείρειν*[33]: and this, as we learn from Pliny[34], Cicero understood to mean November; rendering it by Novembris imbre: and Pliny himself identifies it with the season of the fall of the leaf, Ipso Vergiliarum occasu, iii Id. Nov.[34] Hence Aristophanes[35],

Οὐ γὰρ ἔσθ' ἥδιον ἢ τυχεῖν μὲν ἤδη 'σπαρμένα,
τὸν θεὸν δ' ἐπιψακάζειν, καὶ τότ' εἰπεῖν γειτόνα,
κ', τ. λ.

Οὐ γὰρ οἷόν τ' ἐστὶ πάντως οἰναρίζειν τήμερον,
οὐδὲ τυντλάζειν, ἐπειδὴ παρδακὸν τὸ χωρίον[36].

Ὡς ἂν ἐμπίῃ μεθ' ἡμῶν,
εὖ ποιοῦντος κὠφελοῦντος
τοῦ θεοῦ τἀρώματα[37].

At si triticeam in messem robustaque farra
Exercebis humum, solisque instabis aristis,
Ante tibi Eöæ Atlantides abscondantur,
Gnosiaque ardentis decedat stella Coronæ,
Debita quam sulcis committas semina, quamque

Proclus, and Tzetzes in loc.; the latter of whom, at v. 616, dates the setting of Orion three days only after the other two.

28 v. 389. 29 In voce.

30 E. 272. cf. Geoponica, ii. 14 Didymi.

31 Proclus ad Hesiod. 456. cf. Xenophon, Œconomica, xvii. 4.

32 Theophrastus, Hist. Pl. vi. 5. pag. 210. 1 De Pheo: cf. viii. 1. pag. 254. 2.

33 Xenophon, Œconomica, xvii. 2.

34 H. N. xviii. 60.

35 Pax, 1140.

36 Ibid. 1147.

37 Ibid. 1156.

Invitæ properes anni spem credere terræ.
Multi ante occasum Maiæ cœpere, sed illos
Exspectata seges vanis illusit aristis [38]—

Frumenta ... quo tempore nobis Atlantides occidunt sunt serenda.—Atlantides autem ... Novembri mense nobis incipiunt non videri. cum enim sol in Scorpione fuerit, oriente Scorpione occidit Taurus, in quo Vergiliæ sunt: id est sexto Idus Novembris. ergo *Eöæ* mane abscondantur: ... modo enim vespera, modo media nocte, modo mane oriuntur [39]—Frumenti ipsius totidem genera, per tempora satu divisa. hiberna, quæ circa Vergiliarum occasum sata terra per hiemem nutriuntur, ut triticum far hordeum. æstiva, quæ æstate, ante vergiliarum exortum, seruntur, ut milium [40] &c. alioqui in Græcia et Asia omnia vergiliarum occasu seruntur [41]—

Quod si nec cœli nec campi competit humor,
Ingeniumque loci vel Jupiter abnegat imbres;
Exspectetur hyems, dum Bacchi Gnosius ardor*
Æquore cœruleo celetur vertice mundi,
Solis et adversos metuant Atlantides ortus [42].

It may be here observed that there was a species of wheat, which was always sown in the spring, and ripened in three months' time. Est et bimestre, circa Thraciæ Ænum, quod quadragesimo die quam satum est maturescit [43]—which is taken from Theophrastus [44]. This was called *σητάνιον* or *τήτινον*—from its ripening the same year in which it was sown. Τρίμηνοι· πυροὶ οἵ καὶ σηταμήνιοι (leg. σητάνιοι) λεγόμενοι [45]—Σητάνιοι πυροί· οἱ τῷ ἔαρι σπειρόμενοι τριμηναῖοι λέγονται [46]—Σητάνειοι πυροί· εἰρήται παρὰ τὸ σῆτες [47] (Ionice τῆτες, Dorice σᾶτες). ὅθεν Δωριεῖς μὲν σατίνους λέγουσιν, Ἀττικοὶ δὲ τητίνους—Τητινοί· πυροὶ οἱ τετράμηνοι, οὓς Ἴωνες σητανίους καλοῦσιν [48]—Τῆτες ἐν τῷδε τῷ ἔτει· οἱ δὲ Δωριεῖς σᾶτές φασιν· ὅθεν σατανίους πυροὺς, τοὺς μὴ τελεσφοροῦντας ἀλλὰ πρὸ ὥρας θεριζομένους [49]: which is a gloss unworthy of Hesychius, though it occurs in the Scholia on the Nubes [50]. The best commentary on the meaning of the term is supplied by Galen [51]: Ὅπερ οἱ Ἀττικοὶ τῆτες ὀνομάζουσιν.... ἐξ οὗ σημαίνεσθαί φασι τοὺς ἐν τῷ ἔτει τούτῳ, τουτέστι κατὰ τὸ ἔαρ, ἐσπαρμένους (πυροὺς) διμηνιαίους τε καὶ τεσσαρακονθημέρους ὀνομαζομένους. ἐγὼ δὲ πυρῶν εἶδός τι σητανίους καλουμένους οἶδα κατά τε τὴν Κῶν αὐτὴν, καὶ σύμπαν τὸ κατὰ τὴν Ἀσίαν Ἑλληνικόν—Σπείρονται μὲν οὗτοι (οἱ) πυροὶ κατὰ τὸ ἔαρ εἰσβάλλον, κ', τ. λ. [52].

* The Corona Ariadnes. cf. Georg. i. 223.

38 Georg. i. 219.
39 Servius in loc.
40 Cf. Virgil. Georg. i. 227–229: and Servius in loc.: and Pliny, H. N. xviii. 56. 180.
41 Pliny, H. N. xviii. 10. § 1. cf. xviii. 59.
42 Columella, De Re Rustica, x. De Hortor. Cultu, 50. cf. i. viii. § 2. p. 425.
43 Pliny, H. N. xviii. 12. § 3. p. 67, 68.
44 Hist. Plant. viii. 4. 265. 4.
45 Hesychius, in voce.
46 Phot. Lex. in voce.
47 Etym. M. in voce.
48 Phot. Lex. in voce.
49 Hesych. in voce.
50 Ad ver. 624. Τῆτες.
51 xviii. P. i. 469. 470: περὶ ἄρθρων. of Hipp. Comm. ii 41.
52 Ibid. 470. 1.

It is also observable that these two seasons of the early rising and of the late setting respectively were the times defined by the ancients for the gathering of honey. *Τῇ δὲ τοῦ μέλιτος ἐργασίᾳ διττοὶ καιροὶ, ἔαρ καὶ μετόπωρον* [52]—*Ὅλως δὲ οὐ γίνεται μέλι πρὸ Πλειάδος ἐπιτολῆς* [53]—Venit hoc ex aëre, et maxime siderum exortu, præcipueque ipso Sirio exsplendescente fit, nec omnino prius Vergiliarum exortu sublucanis temporibus [54]—Eximendorum favorum primum putant esse tempus Vergiliarum exortum, secundum æstate acta, antequam totus exoriatur Arcturus. tertium post Vergiliarum occasum [55]—*Καιρὸς ἄριστος τρυγᾶν μέλι καὶ κηρία ἐπιτολὴ Πλειάδων, κατὰ δὲ τοὺς Ῥωμαίους μηνὸς Μαΐου κατ' ἀρχάς. δεύτερος τρυγητὸς ἀρχομένου φθινοπώρου, καὶ τρίτος δυομένων Πλειάδων περὶ Ὀκτώβριον μῆνα* [56]—

> Hæc potior soboles, hinc cœli tempore certo
> Dulcia mella feres [57]—

Et cum oriuntur Pliades et cum occidunt, id est verno tempore et autumno [58]—

> Bis gravidos cogunt fetus, duo tempora messis,
> Taÿgete simul os terris ostendit honestum
> Pleias, et Oceani spretos pede reppulit amnes,
> Aut eadem sidus fugiens ubi Piscis aquosi
> Tristior hibernas cœlo descendit in undas [59]—

Taÿgete una est de Pleiadibus septem. ut autem etiam supra diximus, bis mel præcipit colligendum, orientibus Pleiadibus, id est verno. item quum occidunt, autumnali scilicet tempore. The allusion to the sign of Pisces in this passage has given much trouble to the commentators. The best explanation which has been proposed of it, in our opinion, is that of Vossius, which understands *Piscis aquosi* here, by *synecdoche,* for the winter in general. The cosmical setting of the Pleiads, which is the phenomenon intended, among both the Greeks and Romans, took place at the beginning of winter.

52 Aristot. De Anim. ix. 40. 292. 19.

53 v. 21. 142. 25.

54 Pliny, H. N. xi. 12. De Melle. Cf. H. N. xi. 14: Dies status inchoandæ ut quadam lege naturæ (mellis vindemiæ) . . . tricesimus ab educto examine: fereque Maio mense includitur hæc vindemia—Alterum genus est mellis æstivi, quod ideo vocatur *ὡραῖον*, a tempestivitate præcipue (rather from the season of the year, which the Greeks called the *ὥρα*, the same as the *ὀπώρα*) ipso Sirio exsplendescente, post solstitium diebus tricenis fere—Cap. 15. 260: Huic vindemiæ Attici signum dedere initium caprifici (cf. Arist. De Anim. v. 21: Columella, xi. ii. 56.—the latter half of July: Palladius iv. Tit. x. 28, in June. cf. also vii. Tit. v. 2: Geoponica, iii. 6. p. 80 ad med.)..alii diem Vulcano sacrum, that is, either midsummer day, or the Vulcanalia, ix. Kal. Sept.—Pag. 261: Quidam æstivam mellationem ad Arcturi exortum proferunt (Prid. Id. Sept. Sept. 12.) quoniam ad æquinoctium autumni ab eo supersunt dies xiv. (al. xii. and xiii.) et ab æquinoctio ad Vergiliarum occasum diebus xlviii plurima fit erice—P. 262: Hæc ergo mellatio fine vindemiæ et Vergiliarum occasu Idibus Novembris fere includitur. Compare Columella, De Re Rustica, ix. 14. § 1–12. for an equally particular account of the same times.

55 Varro, De Re Rustica, iii. 16. § 34.

56 Geoponica, xv. 5. Didymi.

57 Georgica, iv. 100.

58 Servius in locum.

59 Georg. iv. 231.

Fourthly, it is to be observed that the season of harvest, thus supposed to have been notified by the rising of the Pleiads, is not to be indiscriminately understood: Αἱ γὰρ Πλειάδες ἐπὶ τὴν τοῦ Ταύρου εἰσὶ τομὴν, αἵτινες ἐν Κριῷ ἐπιτέλλονται, ὅτε ὁ ἥλιος ἐν τῷ Κριῷ ἐστι κατὰ τὴν τοῦ θέρους ἀρχὴν, ὅτε πρῶτον τὰς κριθὰς θερίζουσιν[a]. This is an important distinction. The heliacal rising of the Pleiads, it thus appears, was the signal of BARLEY-HARVEST; and we learn from Theophrastus, that the kind of grain, principally, if not exclusively, cultivated in Attica, was barley. Ἀθήνησι δ' οὖν αἱ κριθαὶ τὰ πλεῖστα ποιοῦσι (τὰ) ἄλφιτα. κριθοφόρος γὰρ ἀρίστη[b]. And hence, in the following passage of Aristophanes, none is mentioned but barley.

> Κἀπευξαμένους τοῖσι θεοῖσιν
> διδόναι πλοῦτον τοῖς Ἕλλησιν,
> κριθάς τε ποιεῖν ἡμᾶς πολλὰς,
> πάντας ὁμοίως, οἶνόν τε πολὺν,
> σῦκά τε τρώγειν[c].

And hence too it is that ἄλφιτα, (which properly means barley-flour,) is of much more frequent occurrence in the Attic poets, and is much more statedly the accompaniment of sacrifice and religious services in general, than ἄλευρα, flour made of wheat; though it must be admitted there was a mystical reason for this distinction, into which we hope to inquire on a future occasion.

The allusions then to the maturity of the corn in Attica, which occur in Thucydides, must doubtless be understood of barley-harvest, not of wheat. Now Theophrastus informs us that, while barley in Egypt was commonly ripe in the sixth month after it had been sown[d], harvest in general was a month earlier there than in Greece: Ὥσπερ ἐν Αἰγύπτῳ φασὶ μηνὶ πρότερον ἢ ἐν τῇ Ἑλλάδι[e]. The Scholia of Theon on Aratus[f], partly quoted supra, proceeded as follows: Ἦρι οὖν τὸν ὄρθρον, ἤγουν τὴν ἀνατολὴν, φησιν· ὑπὸ τὸν ὄρθρον γὰρ ἀνατέλλουσι σὺν ἡλίῳ ὄντι ἐν τῷ Ταύρῳ, ἀπὸ ε' καὶ εἰκάδος τοῦ Φαρμουθὶ μηνὸς, ὅς ἐστι παρὰ Ῥωμαίοις Ἀπρίλλιος, ὅτε καὶ τοῦ θερίζειν ὁ

a Scholia in Aratum, Phænomena, 137: cf. Cod. Mosq. pag. 279, 280.
b H. Plant. viii. 8. 274. 2.
c Pax. 1320.
d Hist. Pl. viii. 2. 259. 7.
e De Caussis, iv. 11. 520. 8.
f v. 264.

καιρὸς παρ' Αἰγυπτίοις. ἑσπέριαι δὲ ἀπὸ ἑσπέρας ἀνατέλλουσιν, ἡλίου ὄντος ἐν Σκορπίῳ, Ἀθὺρ μηνὸς, ὅς ἐστι παρὰ Ῥωμαίοις Νοέμβριος, ὅτε ἐστὶ καιρὸς τοῦ ἀροτριᾷν· τότε γὰρ ἑσπέριαί εἰσιν ὅτε πρὸς ἑσπέραν ἀνατέλλουσιν . . . ληπτέον οὖν, ἑῷαι Φαρμουθὶ ἀρχομένου θέρους ἀνατέλλουσιν, ἑῷαι δὲ δύνουσιν Ἀθὺρ μηνὶ, ἀρχομένου χειμῶνος. The month Athyr, in the Alexandrine Calendar, in every common year, began October 28; the month Pharmuthi in every year alike began on March 27; and the 25th of Pharmuthi was always April 20. This then was the time when barley, according to Theon, began to be reaped in Egypt. By the rule of Theophrastus, consequently, in Attica it would begin a month later; that is, May 20: as nearly as possible the date of the 6th Thargelion in the rectified years of the cycle of Solon, and that of the heliacal rising of the Pleiads, according to Hesiod.

Theophrastus' account of the process, from the first sprouting to the maturity of barley or wheat, is as follows[g]: *Βλαστάνει δὲ τὰ μὲν θᾶττον τὰ δὲ βραδύτερον. καὶ κριθὴ μὲν καὶ πυρὸς ἑβδομαῖα μάλιστα· προτερεῖ δὲ ἡ κριθὴ μᾶλλον . . . . ἐνίοτε γὰρ καὶ ἐνιαχοῦ ἐν ἐλάττοσιν ἡμέραις, καθάπερ ἐν Αἰγύπτῳ· τριταῖον γάρ φασιν καὶ τεταρταῖον ἀνατέλλειν*[h]—*Τὸν μὲν οὖν χειμῶνα ἐν τῇ χλόῃ μένει τὰ σιτώδη· διαγελώσης δὲ τῆς ὥρας καυλὸν ἀφίησιν ἐκ τοῦ μέσου καὶ γονατοῦται . . . . συμβαίνει δ' εὐθὺς ἐν τῷ τρίτῳ γόνατι, τοῖς δὲ ἐν τῷ τετάρτῳ, καὶ τὸν στάχυν ἔχειν . . . . ἀποχυθεὶς δὲ εὐθὺς ἀνθεῖ μεθ' ἡμέρας τέτταρας ἢ πέντε καὶ πυρὸς καὶ κριθὴ, καὶ ἀνθεῖ σχεδὸν τὰς ἴσας· οἱ δὲ τὰς πλείστας λέγοντες ἐν ταῖς ἑπτά φασιν ἀπανθεῖν*[i]. This is that part of the process just before what Thucydides must have intended by *ἐν ἐκβολῇ τοῦ σίτου ὄντος*—*Μετὰ δὲ τὴν ἀπάνθησιν ἁδρύνονται καὶ τελειοῦνται πυρὸς καὶ κριθὴ τεσσαρακονταῖα μάλιστα*[k]: the interval of the *σίτου ἐκβολὴ*, thus put at 40 days. Pliny observes of the same process[l]: Qui (spicæ conceptus) ut spem sui fecit, quatuor aut quinque tardissime diebus florere incipiunt; totidemque aut paullo pluribus deflorescunt: hordeum vero cum tardissime septem. Varro quater novenis diebus fruges absolvi tradit, et mense uno meti. Varro's

[g] H. Pl. viii. 1. 255. 5.

[h] Cf. Proclus ad Hesiod. Opp. et Dies, 389: Varro, De Re Rustica, 1. 34: Pliny, H. N. xviii. 56. p. 182: 10. § 2. and our F. Catholici, iii. 133.

[i] H. P. viii. 2. 258. 4.

[k] Ibid. 259 6.

[l] H. N. xviii. 10. § 4.

own account of it is this[m]: Quarto intervallo inter solstitium et caniculam plerique messem faciunt; quod frumentum dicant quindecim diebus esse in vaginis, quindecim florere, quindecim exarescere cum sit maturum. With which we may compare Columella's[n]: Omne autem frumentum et hordeum, quidquid denique duplici semine est, spicam a tertio ad quartum nodum emittit, et cum totum edidit octo diebus deflorescit, ac deinde grandescit diebus quadraginta, quibus post florem ad maturitatem devenit[o].

Theophrastus proceeds[p]: *Διαφέρει δὲ καὶ πρὸς τὴν τελείωσιν χώρα τε χώρας καὶ ἀὴρ ἀέρος· ἐν ἐλάττοσι γὰρ ἔνιαι δοκοῦσιν ἐκφέρειν· ὥσπερ ἄλλαι τε καὶ μάλιστα ἐπιδήλως Αἴγυπτος· ἐκεῖ γὰρ κριθαὶ μὲν ἐν ἑξαμήνῳ, πυροὶ δὲ ἐν τῷ ἑβδόμῳ· περὶ* (*δὲ*) *τὴν Ἑλλάδα κριθαὶ μὲν ἐν τῷ ἑβδόμῳ, παρὰ δὲ τοῖς πλείστοις* (*ἐν*) *ὀγδόῳ· πυροὶ δὲ ἔτι προσεπιλαμβάνουσιν. οὐ μὴν οὐδὲ ἐκεῖ* (i. e. in Egypt) *τό γε πᾶν πλῆθος οὕτως, ἀλλ' ὅσον εἰς ἀπαρχήν· κομίζεται γὰρ πρὸς ἱερῶν τινῶν χρείαν ἄλφιτα νέα τῷ ἕκτῳ μηνὶ, καὶ ταῦτα ἐκ τῶν ἄνω τόπων ὑπὲρ Μέμφιν*[q]. Compare with these statements, the following of Pliny[r]: Frumenta cum defloruere crassescunt maturanturque cum plurimum diebus quadraginta . . . . milium et omnia æstiva xl diebus maturantur a flore, magna terræ cælique differentia. in Ægypto enim hordeum sexto a satu mense, frumenta septimo metuntur, in Hellade (hordeum) septimo: in Peloponneso octavo: et frumentum etiamnum tardius.

But with regard to the date of the harvest in Egypt, it may be questioned whether Theophrastus himself must not have been misinformed. He told us that harvest in Salamis was much earlier than in Attica, yet that in Attica it was a month earlier than it was at the Hellespont. *Προτερεῖ γὰρ ταῖς ὥραις τὰ Ἀθήνησιν τῶν περὶ Ἑλλήσποντον ἡμέραις τριάκοντα, ἢ οὐ πολλῷ πλείοσιν . . . . τὰ γὰρ ἐν Σαλαμῖνι προτερεῖ πολὺ τῶν ἄλλων τῶν ἐν τῇ Ἀττικῇ*[s]. Yet he told us also that the harvest was a month earlier in Egypt than any where in Greece. We cannot therefore suppose that barley harvest was ever later in Egypt than the middle of April. Theon, we saw, fixed it to the 20th: and even that is probably too

m De Re Rustica, i. 32. p. 197.
n De Re Rustica, ii. xii. 10.
o Cf. Palladius, vi. tit. i. § 1.
p H. Pl viii. 2. 259. 7.
q Cf. De Caussis, iv. 11. 520. 8.
r H. N. xviii. 10. 6.
s H. Pl. viii. 2. 260. 10, 11.

late; for Pliny distinctly asserts that harvest in Egypt began before the first of April, and was over in May; which of course means harvest of both kinds: Reliqua pars non nisi cum falce arva visit paullo ante Kalendas Aprilis, peragitur autem messis Maio[t]. Diodorus dates reaping time in Egypt generally four or five months after sowing time[v], and that probably describes the real state of the case[x]; the former the interval from the sowing to the reaping of barley, the latter from the sowing to the reaping of wheat. There is no reason to suppose there was much difference between the climate of Egypt and that of Phœnicia; or if there was, that of Egypt was probably somewhat the forwarder. Yet it seems to have been known to the Greeks that harvest of both kinds was ready for the sickle in Phœnicia, even by the time of the appearance of the cuckoo.

> *Αἰγύπτου δ' αὖ καὶ Φοινίκης πάσης κόκκυξ βασιλεὺς ἦν·*
> *χὢπόθ' ὁ κόκκυξ εἴποι κοκκὺ, τότε γ' οἱ Φοίνικες ἅπαντες*
> *τοὺς πυροὺς ἂν καὶ τὰς κριθὰς ἐν τοῖς πεδίοις ἐθέριζον*[y].

On which the Scholiast: *Πρὸ θεριτμοῦ δὲ φαίνεται ὁ κόκκυξ ἐν τῇ Φοινίκῃ**. We cannot suppose the cuckoo appeared later in Phœnicia than in Greece; and yet according to Aristotle, it began to appear in Greece, *ἀπὸ τοῦ ἔαρος ἀρξάμενος*—and continued to be seen there until the end of July at least†.

But fourthly, with respect to such a criterion of a natural epoch, (like that of barley or wheat harvest,) as that of the first appearance of a particular constellation in the morning or the evening, in general; it is by all means to be observed that it was not, and in the nature of things could not be, the

* Cf. Schol. ad Aves, 507. *Κοκκὺ ψωλοί:* *Ἔστι δὲ παροιμία παρὰ Φοίνιξι, κοκκὺ ψωλοὶ πεδίονδε· ἀντὶ τοῦ κόκκυγος κράζοντος τὰ πεδία θερίζομεν.*

† De Animal. vi. 7. 161. 23. *Ὁ δὲ κόκκυξ φαίνεται ἐπ' ὀλίγον χρόνον τοῦ θέρους τὸν δὲ χειμῶνα ἀφανίζεται*—(Cf. Pliny, H. N. xii. 30, 31; xviii. 66. § 2. p. 217)—ix. 49. 306. 8: *Ἀφανίζεται δ' ὑπὸ κύνα, φανερὸς δὲ γίνεται ἀπὸ τοῦ ἔαρος ἀρξάμενος μέχρι κυνὸς ἐπιτολῆς*—Etym. M. *Κόκκυξ· ὄρνεον ἐαρινόν*—Ælian, De Nat. Anim. iii. 30: *Καὶ ὁρᾶται δὲ μιὰν ὥραν τοῦ ἔτους τὴν ἀρίστην ὁ κόκκυξ· ἦρος γὰρ ὑπαρχομένου καὶ αὐτὸς ἐμφανής ἐστιν εἰς ἀνατολὰς Σειρίου. εἶτα τῆς τῶν πολλῶν ὄψεως ἀνεχώρησε.* Cf. Hesiod, Opp. et Dies, 484. *Ἦμος κόκκυξ κοκκύζει κ', τ. λ.*

[t] H. N. xviii. 47. cf. xviii. 18. 77. 78—where it is said barley was ripe at New Carthage, in Spain, in April.

[v] i. 36.

[x] Cf. our F. Catholici, ii. 222. note.

[y] Aristophanes, Aves, 504.

simple fact of the phenomenon, as coinciding with the ripeness of the barley or the wheat, to which the coincidence was really due; but the distance from the vernal equinox on the one hand, or from the summer solstice on the other, at which the phenomenon itself became perceptible. This remark is applicable to every instance, in which certain celestial phenomena were connected in the Parapegmata of antiquity, and in the popular opinion and belief, with certain corresponding effects in the natural year—the first appearance of Sirius, for example, in the morning twilight, with the season of the fruits of the *ὀπώρα*, or that of *Προτρυγητὴρ*, vindemitor, with the season of vintage, and that of the *Πλειάδων ἐπιτολὴ* with the arrival of barley harvest. In none of these cases, could the phenomenon itself possess any virtue, or serve any use, but that of a sign, connecting such events as these with their proper seasons in the natural year. The true cause of all such coincidences was the laws of nature, which have appointed that the gradual ripening of grain or fruit every where shall keep pace with the progress of the tropical year through its several cardinal points; that some shall arrive at maturity a certain length of time after the vernal equinox; others, after the summer solstice; others, a certain distance of time before or after the autumnal equinox.

It might happen that some remarkable star, or cluster of stars, might first become visible in the heavens under certain observable circumstances, at each of these seasons also. And to these the attention of men might naturally be directed; and they might soon come to regard them not only as signs, but even as causes, of those events in the natural year, which were seen to accompany them—that is, the different productions of the different seasons, to which those phenomena themselves in the first instance were determined. But both the cardinal points in the natural year, and the places of the stars in the heavens, relatively to them, are liable to be affected by that phenomenon which in the language of physical astronomy is called the Precession; and though this makes no difference to the relations of those points *inter se*, (all being affected by Precession in the same way and to the same extent,) nor consequently to the relations of the different seasons, or of the different productions of nature, to the cardinal points of the tropical year, it makes a great difference to the dates of those seasons, and to the dates of those phenomena in the heavens, which may have been observed to accompany them. at one time compared with another. The effect of Precession is to anticipate the Julian dates of the cardinal points, and consequently those of the natural seasons which depend upon them, at a certain rate perpetually; and to retard the Julian dates of the risings and settings of the stars under the same or similar circumstances, nearly in the same proportion: so that in the course of centuries a given sidereal phenomenon, like this of the rising of Pleiades in the morning twilight—which might once have been a certain criterion of the arrival of barley harvest for a particular climate, would no longer be so. The barley would continue to come ripe at the same distance from the vernal equinox or the summer solstice, as ever; while this phenomenon of the appearance of the constellation in the morning twilight, for the first time, between the same points in the natural year, just at the same season, would not yet be perceptible; nor for many days afterwards.

Hesiod is the first of the Greeks, so far as we know, who has actually connected the season of harvest with this phenomenon; and if the connection between them in point of fact was holding good in his time, it might be supposed to have held good in that of Thucydides and of the Peloponnesian war. But assuming the date of the phenomenon in his time to have been about May 27; what we are bound to consider first of all is the distance of this date from that of the vernal equinox, in his time also, March 27; viz. 61 days: and what we are bound to infer from it is, that if this was the distance of barley harvest from the vernal equinox in *his* time, it must have been that of barley harvest from the same cardinal point, and for the same climate, at any time after his also. Let this test then be applied to B.C. 431, when the vernal equinox was falling March 26. The 62d day from March 26 would fall on May 26; the actual day of the invasion of Attica that year, reckoned from the 30th of Anthesterion, March 7: when the corn, on this principle, could not fail to have arrived at maturity.

v. It follows that barley, in Attica at least, must have been strictly one of the productions of *spring*, as *we* should divide and distribute the year; and we shall see hereafter that in Homer reaping is alluded to as a labour of husbandry in the *spring*, and the ripe corn itself is described by a name which would properly designate the production of *spring*, that of ποίη or πόη, *grass*. In the same way the Attic poets speak of χλόη as synonymous with barley—or χλόη κατ' ἐξοχήν; and Demeter herself, in the Attic ritual, had the name of Χλόη, as the tutelary goddess of this one of the productions of Attica in particular.

> Τὼ δ' εὐχλόου Δήμητρος εἰς ἐπόψιον
> πάγον μολοῦσα[z] κ', τ. λ.

on which the scholiast: Εὐχλόου Δήμητρος ἱερόν ἐστι πρὸς τῇ ἀκροπόλει. καὶ Εὔπολις Μαρικᾷ·

> ἀλλ' εὐθὺ πόλεως εἶμι· θῦσαι γάρ με δεῖ
> κριὸν Χλόῃ Δήμητρι·

adding, Οὕτω δὲ τιμᾶται (ἐκ) τῆς τῶν (κήπων) καρπῶν χλόης· θύουσί τε Θαργηλιῶνος ἕκτῃ. Eustathius repeats the statement[a]: Ἰστέον δὲ ὅτι οὐ μόνον χλόη ἡ γῆθεν φυομένη, . . ἀλλὰ καὶ ἡ Δημήτηρ ἐπιθετικῶς· Χλόης γάρ, φασι, Δημητρὸς ἱερὸν παρά που τὴν Ἀττικήν.

Lastly, according to Theophrastus and Pliny, as we have seen, the average time of barley harvest, out of Attica, παρὰ τοῖς πλείστοις, and in particular for the climate of the Peloponnese, was the eighth month from seed time; and that of wheat harvest not earlier than the ninth. It is in our power to illustrate these statements, and at the same time to shew the truth of our Attic calendar, by two instances of the fact; one in the state of things in the neighbourhood of Mantinea, when the battle of Mantinea was fought there B. C. 362. The harvest was going on at the time: Ἄλλως τε καὶ σίτου συγκομιδῆς οὔσης[b]—and on the day of the battle itself: and it is most probable the harvest in question was barley harvest: that being most suitable to the natural character of the vicinity of Mantinea, a city of Arcadia. Be that as it may, the

[z] Œdip. Col. 1600.

[a] In Il. I. 535. 772. 62. cf. Pausanias, i. xxii. 3: Ἔστι δὲ καὶ γῆς κουροτρόφου καὶ Δήμητρος ἱερὸν Χλόης—Schol. in Aristoph. Lysistr. 835: Χλόης Δήμητρος ἱερὸν ἐν ἀκροπόλει, ἐν ᾧ οἱ Ἀθηναῖοι θύουσι μηνὸς Θαργηλιῶνος, ὡς Φιλόχορός φησιν ἐν ϛ' (the 6th)—Hesych. Χλοιά· (Χλόεια)· ἑορτὴ ἀπὸ τῶν κάλπων (καρπῶν or κήπων) (ὑπὲρ τῶν κήπων or καρπῶν).

[b] Hellenica, vii. v. 14, 15.

date of the battle was Skirrhophorion 12; and Skirrhophorion 12, by our Metonic calendar, Period i. 70 Cycle iv. 13 fell on July 4 B. C. 362. Now supposing seed time at Mantinea, (or any where else in Arcadia,) to have been the *Πλειάδων δύσις*, the first or second week in November; barley harvest by the rule of Theophrastus, eight months later, would be the first or second week in July.

The other example is that of the harvest in the Peloponnese in the fourth year of the war, B. C. 428[c]. This was an Olympic year, and the Games were celebrated that year, as our Olympic calendar will shew, Apollonius 11–16, July 12–17; the last of the Olympic *feriæ* having been July 17. The ambassadors from Mytilene had their audience as soon as the games were over; in consequence of which the Lacedæmonians would have invaded Attica a second time this year[d], having done so once before, according to their usual course of proceeding, *ἅμα τῷ σίτῳ ἀκμάζοντι*[e], and having come back again before the games at Olympia began; but the rest of their allies were not disposed to second them, chiefly because it was inconvenient to take the field again just at that time; they were in the midst of their harvest: *Καὶ οἱ μὲν προθύμως ταῦτα ἔπρασσον· οἱ δὲ ἄλλοι ξύμμαχοι βραδέως τε ξυνελέγοντο καὶ ἐν καρποῦ ξυγκομιδῇ ἦσαν καὶ ἀρρωστίᾳ τοῦ στρατεύειν.* Thus we see that harvest in the Peloponnese was still going on, July 17, long after it had been over in Attica. There is no doubt that harvest of both kinds is meant in this allusion; both that of barley and that of wheat: the latter of which in particular, according to the rule of Theophrastus, might not have begun on a large scale until after the Olympic games; and once begun would last a month at least.

In short, that harvest among the Greeks, and especially the wheat harvest, was understood not to be earlier in general than midsummer, may be inferred from Hesiod's note of the proper time for threshing the corn; the heliacal rising of Orion[f]: which for his time and that of Thucydides may be assumed as the second week in July. It was the custom of the Greeks to thresh out the grain as soon as the corn was cut and carried; a custom, which we shall have occasion to illustrate when treating of the Bœotian Calendar.

[c] Thucyd. iii. 8. [d] iii. 15. [e] iii. 1. [f] Opera et Dies, 595.

It may be inferred too, from the story related of Democritus. Tradunt, says Pliny[g], eumdem Democritum, metente Damaso fratre ejus ardentissimo æstu orasse ut reliquæ segeti parceret, raperetque desecta sub tectum; paucis mox horis sævo imbre vaticinatione adprobata. Quintus Smyrnæus, an Asiatic Greek, dates the ripening of cornfields as such, for that climate, in the summer; meaning thereby, May and June.

Οἶος δ' ἔβαλεν μενεδήϊος Αἴας
χειρὸς ἀπὸ κρατερῆς, ὡσεὶ δρυὸς ἀγρονόμοιο
ὄζον ἀπαυανθέντα θέρους εὐθαλπέος ὥρῃ,
ὁππότε λήϊα πάντα κατὰ χθονὸς αὐαίνηται[h].

Oppian, another Asiatic Greek[i], dates the reaping in the *ὀπώρα*; i. e. the part of the summer next after the heliacal rising of Orion and Sirius.

Αἱ δ' ἐφέπονται
ἀστεμφεῖς, μυίαις ἐναλίγκιοι, αἵ ῥά τ' ἐπ' ἔργοις
ἀνέρας ἀμητῆρας ὀπωρινὸν μογέοντας
παντόσ' ἀνιηραὶ θέρεος στίχες ἀμφιπέτονται[k].

From Livy's secount of the ascent of Mount Hæmus by Philip of Macedon, B. C. 181[l], it appears that though later than the exortus caniculæ for that latitude (the end of July at least) corn harvest was not yet over, directly after.

Ut nunc canæ frigora brumæ
Nudent sylvas[m]; nunc arbustis
Redeant umbræ: nunc æstivi
Colla Leonis Cererem magno
Fervore coquant; viresque suas
Temperet annus[n].

Vel quum sole novo densæ torrentur aristæ
Aut Hermi campo aut Lyciæ flaventibus arvis[o].

which Servius explains by Prima æstatis parte: nam proprie sol novus est octavo Kalendas Januarias: sed tunc non sunt aristæ; quas ab ariditate dictas esse constat.

[g] H. N. xviii. 78. cf. Diogenes Laert. ix. vii. § vii. 39. See another anecdote of Democritus, of a similar description, Pliny, H. N. xviii. 68. § 3. 232.

[h] iv. 439.

[i] Cf. our Origines Kal. Italicæ, iv. 240. *n*.

[k] Halieutica, ii. 445.

[l] xl. 21, 22. (cf. 17, 18).

[m] Seneca Trag. Hippolytus, 967.

[n] Cf. our Origines Kal. Italicæ, ii 139. seq.

[o] Æneid. vii. 720.

vi. Interval from the beginning of the War to the date of the Truce, B. C. 421.

Αὗται αἱ σπονδαὶ ἐγένοντο τελευτῶντος τοῦ χειμῶνος, ἅμα ἦρι, ἐκ Διονυσίων εὐθὺς τῶν ἀστικῶν, αὐτόδεκα ἐτῶν διελθόντων, καὶ ἡμερῶν ὀλίγων παρενεγκουσῶν, ἢ ὡς τὸ πρῶτον ἡ ἐσβολὴ ἡ ἐς τὴν Ἀττικὴν καὶ ἡ ἀρχὴ τοῦ πολέμου τοῦδε ἐγένετο. σκοπείτω δέ τις κατὰ τοὺς χρόνους, καὶ μὴ τῶν ἑκασταχοῦ ἢ ἀρχόντων ἢ ἀπὸ τιμῆς τινὸς τὴν ἀπαρίθμησιν τῶν ὀνομάτων ἐς τὰ προγεγενημένα σημαινόντων πιστεύσας μᾶλλον. οὐ γὰρ ἀκριβές ἐστιν οἷς καὶ ἀρχομένοις καὶ μεσοῦσι καὶ ὅπως ἔτυχέ τῳ ἐπεγένετό τι. κατὰ θέρη δὲ καὶ χειμῶνας ἀριθμῶν, ὥσπερ γέγραπται, εὑρήσει, ἐξ ἡμισείας ἑκατέρου, τοῦ ἐνιαυτοῦ τὴν δύναμιν ἔχοντος, δέκα μὲν θέρη ἴσους δὲ χειμῶνας τῷ πρώτῳ πολέμῳ τῷδε γεγενημένους[p]. Thucydides is speaking of the date of the truce, concluded at the end of the tenth year, on the 27th of Artemisius, by the Spartan calendar, and 25th of Elaphebolion, by the Attic[q], B. C. 421. It is scarcely possible to read this passage, and not be surprised that so many scholars should have concurred in dating the war from the end of the tenth month of the calendar, supposed to have been Munychion, B. C. 431 ; notwithstanding this plain statement, that, from its actual commencement up to the date of this truce, an actual interval of ten years, not inchoate merely or current, but finished and complete, (made up of ten complete summers and ten complete winters,) had elapsed—besides some days, more or fewer, of an eleventh year, which it expresses by *ἡμερῶν ὀλίγων παρενεγκουσῶν*. In the construction of these words it might be supposed the learned had agreed to give them for this once a meaning which they never had, nor ever could have had, in the Greek language. Παραφέρω is properly a verb transitive, denoting to *carry by*, to *carry past :* and though most commonly used as a verb neuter, its sense, as so used, is to the same effect, to *pass by*, to *surpass*, to *exceed*. In this instance however, it has been virtually so construed as if it meant just the reverse ; to fall short, to be in defect of, or the like : as if Thucydides by the use of this phrase, had intended to say the entire duration of the war up to the conclusion of this truce, was a few days *less* than ten years, instead of a few days more. If this

p v. 20. q v. 19. 25.

has not been asserted in so many words, yet it follows as a necessary consequence of dating the beginning of the war from the end of Munychion, B. C. 431. For what was the actual interval between the end of Munychion, B. C. 431, and the 25th of Elaphebolion, B. C. 421? This interval in the civil lunar reckoning of the Attic calendar was neither more nor less than nine years, ten months, and twenty-five days; one month and five days less than ten years complete: and in the Julian reckoning, from the Julian date of Munychion 30, May 7, B. C. 431, to the Julian date of Elaphebolion 25, April 10, B. C. 421—it was only nine years, eleven months, and three days more at the utmost. And if this is the consequence of dating the commencement of the war even with the surprise of Platæa, Munychion 30, May 6 or 7, B. C. 431—what must be the consequence of dating it only from the invasion of the Attic territory, 80 days later, July 25 or 26, B. C. 431, Hecatombæon 22, except that, on such a supposition, instead of having lasted ten years complete and a few days over of an eleventh, up to the date of the truce, it could have lasted only nine years complete, and three quarters of a tenth.

No such absurdity follows from dating its proper commencement with the end of the second month of Pythodorus, Anthesterion 30, B. C. 431. From that day, B. C. 431, to the same day, B. C. 421—you have by the popular or calendar reckoning of the time just ten years complete; and from the same date, B. C. 431, to the 25th of Elaphebolion, B. C. 421, you have just ten years complete and 25 days of an eleventh: and it was little more, in the Julian reckoning, from March 7, B. C. 431, to April 10, B. C. 421, ten years, one month, and three days. There can be no doubt that both in this instance, and in every other, Thucydides reckons by the lunar calendar, the proper civil and official calendar of the Athenians: and reckoned in terms of that, it was impossible that the interval from Anthesterion 30, B. C. 431, to Elaphebolion 25, B. C. 421, could have been differently represented than it is by *Αὐτόδεκα ἐτῶν διελθόντων, καὶ ἡμερῶν ὀλίγων παρενεγκουσῶν* *.

* No one, it is to be presumed, will think of raising a difficulty about the proper epoch to which this computation is to be referred—though de-

fined in the text by ὡς τὸ πρῶτον ἡ ἐσβολὴ ἡ ἐς τὴν Ἀττικὴν κ᾽, τ. λ., which at first sight, and independently of the context, would seem to denote the first actual invasion, after the siege of Œnoë. But the same epoch is also defined by ἡ ἀρχὴ τοῦ πολέμου τοῦδε: and we have only to turn to ii. 1. to see that the beginning of the war is dated with the attempt on Platæa, not with the invasion of Attica. Platæa was locally indeed comprehended in Bœotia, but it belonged to Attica; and it was virtually a part of Attica, though situated in Bœotia. An armed irruption into the territory of Platæa, and much more an actual assault of the city of Platæa, under such circumstances, was as much an open act of hostility as an invasion of Attica, or even an attack on Athens itself. We apprehend then that the true date of the beginning of the war, in the opinion of Thucydides, was that of this assault on Platæa; and that he reckoned the years of its duration, from this point of time, and from none else. Upon this particular question however of the interval which had actually elapsed from the proper beginning of the war, whatsoever that was, to the date of the truce; it only adds to the difficulty, as we have already observed, to suppose the point of time, from which it is calculated, 80 days later even than the date of this assault.

It is scarcely necessary to remind any one who has read Thucydides, that his invariable rule is to date the end of every year of the war with the end of his χειμὼν, and the beginning of the next with the beginning of his θέρος. See ii. 47, the end of the 1st year, B. C. 430—ii. 70, that of the 2nd, B. C. 429—ii. 103, that of the 3rd, B. C. 428—iii. 25, that of the 4th, B. C. 427—iii. 88, that of the 5th, B. C. 426—iii. 116, that of the 6th, B. C. 425—iv. 51, that of the 7th, B.C. 424—iv. 116, that of the 8th, B.C. 423—iv. 135, that of the 9th, B. C. 422—v. 17, 20, that of the 10th, B. C. 421—v. 39, that of the 11th, B. C. 420—v. 51, that of the 12th, B. C. 419—v. 56, that of the 13th, B. C. 418—v. 81, that of the 14th, B. C. 417—v. 83, that of the 15th, B. C. 416—vi. 7, that of the 16th, B. C. 415—vi. 93, 94, that of the 17th, B. C. 414—vii. 18, 19, that of the 18th, B. C. 413—viii. 6, that of the 19th, B. C. 412—viii. 60, 61, that of the 20th, B. C. 411—lower than which, in years complete, his history does not descend; breaking off with the summer of the 21st year, still incomplete, B. C. 411—viii. 109.

In all these instances, the end of the χειμὼν is the close of one current year; and the beginning of the θέρος is the commencement of the next. We have seen too that as referred to the natural divisions of the year, the chronological χειμὼν of Thucydides includes the late autumn and the early spring—the chronological θέρος, the late spring and the early autumn: that is, the χειμὼν properly begins at the autumnal equinox, and ends at the vernal; the θέρος properly begins at the vernal, and ends at the autumnal. Now the attempt on Platæa, the proper epoch of the commencement of the war, took place ἅμα ἦρι ἀρχομένῳ, B. C. 431, i. e. in the *early* spring—before the end of the chronological χειμὼν of Thucydides; these σπονδαὶ were concluded τελευτῶντος τοῦ χειμῶνος—that is, before the end of the chronological χειμὼν, B. C. 421, yet obviously nearer to its

vii. Date in the years of the War of the burning of the Temple of Hera at Argos.

It has been seen that in the style of Argos, as contradistinguished to that of Athens, the date of the beginning of the war was the current year of the priestess of Hera, whose name at this time was Chrysis: the rule of the reckoning of civil time at Argos, long before the breaking out of the Peloponnesian war, as we learn from other authorities[r], having been to keep it in the years of these priestesses. The first year of the war, so dated and so reckoned, was the 48th of the priesthood of Chrysis; though whether it was the beginning of that year, or the end, or some particular point between the two, we have not been informed. In the ninth year of the war, through some negligence of hers, the temple was set on fire, and burnt down. Thucydides' account of that accident is as follows[s]: *Καὶ ὁ νεὼς τῆς Ἥρας τοῦ αὐτοῦ θέρους ἐν Ἄργει κατεκαύθη, Χρυσίδος τῆς ἱερείας λύχνον τινὰ θείσης ἡμμένον πρὸς τὰ στέμματα, καὶ ἐπικαταδαρθούσης, ὥστε ἔλαθεν ἀφθέντα πάντα καὶ καταφλεχθέντα*. καὶ ἡ Χρυσὶς μὲν εὐθὺς τῆς*

conclusion than the surprise of Platæa, B. C. 431. The interval then from the one to the other, in the chronology of Thucydides, could not be represented at less than ten years; but it might, or rather it must be, at something more. It is evident that the date of this truce was later in the spring, B. C. 421, than the surprise of Platæa, B. C. 431. Thucydides, it is observable, dates this too *ἅμα ἦρι*, B. C. 421—but not *ἅμα ἦρι ἀρχομένῳ*, as he did the former. The early spring in fact of that year (for of that the context requires it to be understood) is mentioned v. 17—even before the date of the truce itself.

* There are some interesting particulars, relating to this temple, in the Scholia on the Electra of Sophocles: v. 6.

αὕτη δ' Ὀρέστα τοῦ λυκοκτόνου θεοῦ
ἀγορὰ Λύκειος, οὑξ ἀριστερᾶς δ' ὅδε
Ἥρας ὁ κλεινὸς ναός· οἷ δ' ἱκάνομεν
φάσκειν Μυκήνας τὰς πολυχρύσους ὁρᾶν.

Herod. i. 31 —the temple was 45 stades from Argos: Pausanias, ii. xvii. 1. 15 from Mykenæ, and on the left of the road to Argos. He too (§ 7.) mentions the burning of the temple in the time of Chrysis; and says she took refuge at Tegea, in the temple of Athena Alea there: (cf. iii. v. 6: viii. xlv. 3, 4: xlvii. 1: Frontinus, iii. ii. 8:) yet that her statue

r Cf. the Corp. Inscription. Græc. 2655. s iv. 133.

νυκτὸς, δείσασα τοὺς Ἀργείους, ἐς Φλιοῦντα φεύγει· οἱ δὲ ἄλλην ἱέρειαν ἐκ τοῦ νόμου τοῦ προκειμένου κατεστήσαντο, Φαεινίδα ὄνομα. ἔτη δὲ Χρυσὶς τοῦ πολέμου τοῦδε ἐπέλαβεν ὀκτὼ, καὶ ἔνατον ἐκ μέσου, ὅτε ἐπεφεύγει.

The year was B. C. 423, the ninth of the war, and the time of the year not only *τοῦ θέρους*, but *τοῦ θέρους ἤδη τελευτῶντος*: as appears both from the sequel of this chapter[s], and from the beginning of the next[t]: Ἐν δὲ τῷ ἐπιόντι χειμῶνι. The chronological summer of Thucydides ended with the autumnal equinox. The temple therefore must have been burnt down before the autumnal equinox, B. C. 423, yet not long before it; i. e. we may presume, some time early in September—yet eight years six months from the proper beginning of the war.

Reckon on then eight years six months by the calendar from Elaphebolion 1, B. C. 431, and you come to Boëdromion 1, B. C. 423—the Julian date of which, by the Metonic cycle, was Sept. 4. If the temple was burnt about this time, the date of its destruction might be truly represented *τοῦ αὐτοῦ θέρους*, and yet *τοῦ θέρους ἤδη τελευτῶντος*. The summer of Thucydides includes the first part of the autumn of the received divisions of the year, the *φθινόπωρον* properly so called, the interval from the heliacal rising of Arcturus to the autumnal equinox. In the calendar of Meton and Euctemon we have two dates of this phenomenon, Sept. 6 and Sept. 16; one of which must have been intended by Thucydides, as his date of the completion of the circumvallation of Platæa, B. C. 429[v]. But the *φθινόπωρον* of antiquity was properly the interval from the latter to the autumnal equinox.

Let this same interval however of eight years six months be reckoned from the end of Munychion, B. C. 431; and it

was not removed by the Argives from among those of their priestesses. Strabo (viii. 6. 195 a.) makes the temple 40 stades from Argos, 10 from Mykenæ: and (200, 201) Mykenæ 50 stades from Argos. Yet no traces of Mykenæ were left in his time (201. 6). Cf. Diodor. Sic. xi. 65. Theagenides (B. C. 468), when the Argives destroyed it; and Strabo, viii. 6. 209: *Μετὰ δὲ τὴν ἐν Σαλαμῖνι ναυμαχίαν Ἀργεῖοι μετὰ Κλεωναίων καὶ Τεγεατῶν ἐπελθόντες ἄρδην τὰς Μυκήνας ἀνεῖλον, καὶ τὴν χώραν διενείμαντο.*

[s] iv. 133. [t] iv. 134. [v] ii. 78.

will bring us to the end of Pyanepsion, B. C. 423, Nov. 1 in the Metonic calendar of the time being, and only the day before the first of the winter months, Mæmacterion: before which the chronological χειμὼν of Thucydides must have long begun. This date then of the conflagration of the temple of Hera at Argos, not more than six months from the proper beginning of the ninth year of the war, yet still in the summer of that year, and before the autumnal equinox in the natural year, is as strong an argument that the years of the war must have been dated by Thucydides from the end of the month Anthesterion, as any which has yet been adduced.

viii. Date of the Alliance between the Lacedæmonians and the Athenians B. C. 421; and the interval between that and the resumption of hostilities B. C. 413.

A separate treaty of alliance was concluded between the Lacedæmonians and the Athenians the same year as the Σπονδαὶ or Truce, between the parties in the war in general[x]. Thucydides observes of this[y], Αὕτη ἡ ξυμμαχία ἐγένετο μετὰ τὰς σπονδὰς οὐ πολλῷ ὕστερον ... καὶ τὸ θέρος ἦρχε τοῦ ἑνδεκάτου ἔτους. The date of this alliance then was later than Elaphebolion 25, B. C. 421, yet earlier than the chronological θέρος of the 11th year of the war. The proper beginning of summer in the calendar was May 6—which B. C. 421 coincided with Munychion 21. The chronological summer of Thucydides, dated from the vernal equinox (March 24 in the Metonic calendar)—always fell out in Elaphebolion, but sometimes earlier, sometimes later: so that Elaphebolion might be reckoned sometimes the last month of his χειμὼν, sometimes the first of his θέρος. And it is manifest that in this instance he must have reckoned it the last of his χειμὼν, and Munychion the first of his θέρος. In any case the date of this alliance must have been later than Elaphebolion 25, and Elaphebolion 25 earlier than the end of Thucydides' χειμὼν, yet not earlier than Munychion 25, when his θέρος must certainly have been some time begun.

He continues[y]: Ταῦτα δὲ τὰ δέκα ἔτη ὁ πρῶτος πόλεμος ξυνε-

[x] v. 24. [y] v. 24.

χῶς γενόμενος γέγραπται. And then[z]: Καὶ ἐπὶ ἓξ ἔτη μὲν καὶ δέκα μῆνας ἀπέσχοντο μὴ ἐπὶ τὴν ἑκατέρων γῆν στρατεῦσαι, ἔξωθεν δὲ μετ' ἀνακωχῆς οὐ βεβαίου ἔβλαπτον ἀλλήλους τὰ μάλιστα· ἔπειτα μέντοι καὶ ἀναγκασθέντες λῦσαι τὰς μετὰ τὰ δέκα ἔτη σπονδὰς, αὖθις ἐς πόλεμον φανερὸν κατέστησαν. In this passage the learned have seen the necessity of some correction of the text, affecting either the first of these numbers, or both. The first instance of an actual aggression of either of the principal parties upon the territory, or what might be considered in any sense the territory, of the other, was the expedition of the Lacedæmonians against Argolis, and that of the Athenians against Epidaurus Limera[a]; both in the summer of the 18th year of the war, B. C. 414[b]; and the latter in particular, as the context shews[c], when the summer was a good deal advanced. Now from any time about the beginning of Thucydides' summer, B. C. 421, to the same time B. C. 414, the interval could not have been less than seven years complete. It is agreed therefore that instead of ἐπὶ ἓξ ἔτη in the above passage we ought to read ἐπὶ ἑπτὰ ἔτη.

Besides this correction however some of the learned have proposed to read καὶ δύο μῆνας also instead of καὶ δέκα μῆνας: which is both highly improbable in itself, and in our opinion unnecessary. Thucydides takes no notice, in this general statement, of the particular case of the invasion of Argolis on the one hand, or of that of Epidaurus on the other, because both were isolated acts of aggression: neither properly on the territory of the Lacedæmonians or of the Athenians respectively, and neither of any great importance in its consequences, except as furnishing a pretext for the renewal of the war, which both the parties had already determined to renew even without one. The thing which he had in view was the resumption of hostilities in the same regular way as at first: and this could not be said to have taken place until the Peloponnesians invaded Attica at the beginning of the nineteenth year, B. C. 413, and took possession of Dekeleia: from which event the denomination applied to the last period of the War, that of the πόλεμος Δεκελεϊκὸς, took its rise.

His meaning in the present instance will be best explained by what he says himself historically of that event[d]: Τοῦ δ'

[z] v. 25. [a] vi. 105. [b] vi. 93, 94. [c] vi. 96–104. [d] vii. 19.

ἐπιγιγνομένου ἦρος εὐθὺς ἀρχομένου, πρῳαίτατα δὴ οἱ Λακεδαιμόνιοι καὶ οἱ ξύμμαχοι ἐς τὴν Ἀττικὴν ἐσέβαλον. The object of this invasion not having been merely to occupy the country for a time and to destroy the crops, but to seize on Dekeleia and to retain possession of it; it was made at a much earlier period in the year than any before it: so that, knowing the idiom of Thucydides with respect to this phrase of the beginning of spring, we could not suppose the notes of time premised to this event, τοῦ ἦρος εὐθὺς ἀρχομένου and πρῳαίτατα δὴ, to have been intended of a later month in the calendar than the first of the spring months, Anthesterion. Reckon then seven years ten months by the calendar from any time between Elaphebolion 25 and Munychion 25 B.C. 421, and you come to the same time between Gamelion 25 and Anthesterion 25 B.C. 413, the former Feb. 12, the latter March 13; the middle point between which would be Feb. 27 Anthesterion 10. An invasion made at that particular time might be justly described as πρῳαίτατα δὴ, and as ἦρος εὐθὺς ἀρχομένου. Nor have we any doubt that this is what Thucydides intended by his ἓξ ἔτη (corrected by ἑπτὰ ἔτη) and δέκα μῆνας.

ix. Entire Duration of the War, according to Thucydides.

The above inferences are all confirmed, in the last place, by his estimate of the entire duration of the War; which will be found to furnish another example of the same mode of reckoning, and of the same mode of speaking, which we considered supra[e]. Γέγραφε δὲ καὶ ταῦτα ὁ αὐτὸς Θουκυδίδης Ἀθηναῖος ἑξῆς, ὡς ἕκαστα ἐγένετο, κατὰ θέρη καὶ χειμῶνας, μέχρι οὗ τήν τε ἀρχὴν κατέπαυσαν τῶν Ἀθηναίων Λακεδαιμόνιοι καὶ οἱ ξύμμαχοι, καὶ τὰ μακρὰ τείχη καὶ τὸν Πειραιᾶ κατέλαβον. ἔτη δὲ ἐς τοῦτο τὰ ξύμπαντα ἐγένετο τῷ πολέμῳ ἑπτὰ καὶ εἴκοσι . . . . ὥστε ξὺν τῷ πρώτῳ πολέμῳ τῷ δεκαετεῖ, καὶ τῇ μετ' αὐτὸν ὑπόπτῳ ἀνακωχῇ, καὶ τῷ ὕστερον ἐξ αὐτῆς πολέμῳ, εὑρήσει τις τοσαῦτα ἔτη λογιζόμενος κατὰ τοὺς χρόνους, καὶ ἡμέρας οὐ πολλὰς παρενεγκούσας . . . ἀεὶ γὰρ ἔγωγε μέμνημαι, καὶ ἀρχομένου τοῦ πολέμου καὶ μέχρι οὗ ἐτελεύτησε, προφερόμενον ὑπὸ πολλῶν ὅτι τρὶς ἐννέα ἔτη δέοι γενέσθαι αὐτόν[f].

It thus appears that he dated the close of the War with

[e] Page 166. vi. [f] v. 26.

the occupation of the Piræus; and reckoned its total duration from its proper commencement to that consummation at twenty-seven years and a few days over. Now the date of this occupation and of the destruction of the Long Walls was the 16th of Munychion[g] B. C. 404. To this time by the calendar from Anthesterion 30 B. C. 431, the intervening period could not be reckoned at less than 27 years, 1 month, and 16 days; to the same time from Munychion 30 B. C. 431 it could not have been reckoned at more than 26 years, 11 months, 16 days: so that, on this principle, and in this case too, by the use of such a phrase as ἡμέρας οὐ πολλὰς παρενεγκούσας we should be obliged to suppose Thucydides to have intended a few days less, not a few days more, than 27 years complete, contrary to the literal and grammatical sense of the phrase itself*.

x. Actual date of the Surprise of Platæa, B. C. 431.

Before however we take our leave of the argument from the testimony of Thucydides on this question of the actual beginning of the Archontic year B. C. 431, it is proper to notice a statement of his; which occurs in the speech attributed to the Platæans, B. C. 427, and at first sight seems to be inconsistent with our conclusions, but in reality, when rightly understood and explained, is found to confirm them.

In this speech the Platæans accused the Thebans of having

* Xenophon (Hell. ii. iii. § 9.) reckons the entire duration of the War, as his text stands at present, at 28 years 6 months. The first of those numbers must be an error for 27. As to the six months; he dates the end of the War with the return of Lysander home, after the reduction of Samos—a later event than that of the Piræus the same year: cf. Diodor. Sic. xiv. 3: xiii. 106, 107. And this could not have been earlier than the date of the solar eclipse, Sept. 3, B. C. 404—which Xenophon himself mentions, ii. iii. § 4. That date in the calendar of Meton answered to Metageitnion 30. The actual return after this is dated τελευτῶντος τοῦ θέρους (§ 9), which in the idiom of Thucydides would have denoted some time in September, only before the autumnal equinox; and we have no doubt does the same here, in the idiom of Xenophon. The end of the War then was dated by him some time in Boëdromion B. C. 404; to which, from Anthesterion 30 B. C. 431, the interval would be 27 years complete, and as nearly as possible six months.

[g] Plutarch, Lysander, xv. cf. the Hellenica, ii. ii. 17–24: iii. 1.

invaded their city not only during a time of truce, but also during an ἱερομηνία of some kind[h]. Nor did the Thebans deny this circumstance of the aggression, thus laid to their charge, even while they attempted to justify the fact of the aggression itself[i].

This word ἱερομηνία is applied sometimes to the whole of a month, and sometimes to certain parts of the month; but its commonest meaning is that of some one day of a month, esteemed and kept as sacred in contradistinction to the rest: and we are told by the scholiast on Pindar[k] that with this restriction it properly denoted the first of the month; and that the word itself was derived by syncope or abbreviation from ἱερονουμηνία: Ἱερομηνίαν δὲ λέγουσι κατὰ σύντμησιν τὴν ἱερονουμηνίαν. αἱ γὰρ τῶν μηνῶν ἀρχαὶ ἱεραί εἰσι τοῦ Ἀπόλλωνος, καθὸ ὁ αὐτὸς δοκεῖ εἶναι τῷ ἡλίῳ †. That the first day of the lunar month among the Greeks was sacred to Apollo in particular, or even to all the gods in common, we know from other authority also: and such being the estimation of this one day of the month, and such the reason of it, we may take it for granted that the first of the month was a day in the

† The formation of this word ἱερομηνία is analogous to that of ἀρχομηνία, νεομηνία or νουμηνία, and διχομηνία. It is observable of each of these latter, that it properly denoted one day of the month; ἀρχομηνία, the beginning day of the month, νεομηνία the new day of the month, the first of the lunar month, διχομηνία the dividing or bisecting day of the month, the middle day of the month, the πεντεκαιδεκάτη of the month, as it is generally explained. Each of these terms then, though used as a substantive, must have been originally an adjective; and each of them, even as used by itself, must suppose a substantive, ἡμέρα understood. On the same principle ἱερομηνία would be properly an adjective, with the substantive ἡμέρα understood; and its proper sense would be that of the ἱερὰ τοῦ μῆνος ἡμέρα, the holy day of the month. And every day of the month would be an ἱερομηνία, in this sense, which was only an holy or sacred day in contradistinction to the rest; and there would be many ἱερομηνίαι in the same month, if there were many holidays in it, and several days in succession might be ἱερομηνίαι, if several days in succession were holidays. To derive this term etymologically from ἱερονουμηνία would be inadmissible: but it is far from improbable that its first and most proper sense was that of the *first day* of the month. The first day of the month was the first to which such a descriptive epithet as that of ἱερομηνία could be applied. We reserve however the farther illustration of the use of this term for a future opportunity.

h iii. 56. i iii. 65. k Ad Nemea, iii. 1.

calendar which both the Platæans and Bœotians under other circumstances would have agreed to respect.

If then the attempt to surprise Platæa was made on an *ἱερομηνία* of this kind; it would seem to follow that it must have been made on the first of the month: and yet Thucydides himself told us it was made *τελευτῶντος τοῦ μηνός*. We shall not endeavour to explain this apparent inconsistency by arguing that there could be very little difference between the end of one month and the beginning of the next to it: especially with regard to the date of a fact which certainly happened in the night, and very possibly the night after the last day of one month, and before the first day of another. Nor shall we answer the objection by contending that possibly by the end of the month, Thucydides might mean the end of the moon: especially where the object proposed by the allusion was to account for those circumstantial peculiarities of the time and the occasion, on which he particularly insisted; the darkness of the night, the rain, and the weather—which would be more characteristic of the end of the moon than of the end of the month. The true explanation of the inconsistency is a very curious matter of fact, which could never have been known at present without the possession both of the old Octaëteric Correction of Solon, and of the Metonic Correction, some time or other substituted at Athens for it.

The old Octaëteric Correction was still in use at Athens, B.C. 431; yet the Metonic Correction was published there, B.C. 432. The style of Platæa too, though originally different from that of Athens[1], at the time of this attempt on their city, was the same with it; as we hope to shew more at large on a future opportunity. The civil calendar at Athens then, and the civil calendar at Platæa, at the time of this attempt being the same, and each the old Octaëteric Correction of Solon—the thing to be observed is *this;* that between this old Octaëteric Correction, still retained at Athens, B.C. 431, and the Metonic Correction published to the world B.C. 432, there was one or two days' difference: the first day of the month in the former at this very time was falling on the last day, or last but one, of the month in

[1] Cf. our Fasti Catholici, i. 576 sqq.

the latter. The first of Elaphebolion, for instance, in the former at this time was falling on the 29th of Anthesterion in the latter; March 7 at 18 hours by the Attic rule of the reckoning of the noctidiurnal cycle, March 8 at midnight by the Julian.

In this distinction we have all the explanation of the inconsistency in question which can be desired. The date of the attempt in the Metonic calendar of the time being was the 29th of Anthesterion, in the Platæan of the time being it was the 1st of Elaphebolion. Thucydides was free to reckon it by either; and he would have this further inducement to reckon it by the former, that the Metonic correction at this time was true to the moon, and the end of the month by that was the end of the moon also; but the Platæan, or actual civil calendar of Attica for the time being, was one day behind the moon. Besides which, though the Metonic Correction had not yet become the civil calendar of Athens at the time of this attempt on Platæa, it did become so a very few years afterwards; and possibly before Thucydides had yet put the finishing hand to this part of his history itself. The lunar reckoning which he followed in every other part of his history, is the Metonic; and therefore it is to be presumed that was the reckoning which he purposely followed in this part also.

It is likewise to be observed, as another curious discovery, brought to light by the comparison of these calendars, that though this day, March 8 B. C. 431, was the *νουμηνία* of a certain month in the calendar of Athens and that of Platæa at this time, and in that capacity was an *ἱερομηνία*, it was not so in the Bœotian calendar of the time being. It will be seen hereafter that, in the Bœotian Type of the Octaëteric Correction, the epochs of all the months, both at first and ever after, fell on the 6th of the corresponding months in the Attic Type; and that the *νουμηνία* of a given month in the latter was the *πέμπτη φθίνοντος*, the 26th of the month, in the former. The Thebans indeed did not urge this distinction in answer to the charge brought against them; nor could they have done so, without entering into explanations which Thucydides might not have considered suitable to the time and occasion. March 8 however of this time, though the first of the third month in the Platæan calendar, was only the 26th of the second in the Bœotian; and it is very conceivable that this distinction itself might be the reason why they fixed upon that day for making their attempt on Platæa. It was an ἱερομηνία in the Platæan calendar, and therefore a day on which they would least of all expect such an attempt: and yet it was a common day in the Bœotian, and consequently one which the Bœotians were free to use even for such a purpose as this. And this would be only one instance among many, (*a priori* liable to occur, while the calendars of the different Greek communities were so various,) of such an anomaly as this, whereby the same day might be a *dies festus* in one, and a *dies profestus* in another—and while it claimed the privileges of an ἱερομηνία by the rule of one, might be esteemed and treated as a common day, according to that of another.

Section III.—*Conclusion deducible from the above premises, respecting the beginning of the official year at Athens,* B.C. 431.

The common result of these various considerations, and especially of what has just been shewn, is *this*, that the true date of the Peloponnesian war, the date by which the whole of the subsequent chronology of that war was determined and shaped, according to Thucydides, was the 29th of Anthesterion in the calendar of Meton, the first of Elaphebolion in that of Solon, of the time being; each of them answering alike to the Julian March 8 at midnight the same year. And this being only the last day but one of the second month, or at the utmost only the very first day of the third month, in the official year of Pythodorus; it follows that this year must have begun on the first of Gamelion, Jan. 8 at midnight, last before. Consequently the official year was still beginning at the same time B. C. 431, in the first year of the Peloponnesian war, as B. C. 592, the year after the archonship and legislation of Solon. It will follow from this fact also, that whatsoever change might some time or other be made in the beginning of this year, none could have been made before B. C. 431 at least; and consequently if such a change was first made when the Metonic Correction was first received into public use, the Metonic Correction could not have been received into public use by B. C. 431 at least.

On this point however more will be said elsewhere. At present we are concerned only with the question of the ingress of the civil year at Athens, from the time of Solon down to that of the Peloponnesian war: with respect to which the proof just deduced from the testimony of Thucydides alone, that it could not yet have undergone any change by the beginning at least of that war, may justly, in our opinion, be considered complete. Yet there are other testimonies distinct from his, which lead to the same conclusion; though the prejudices of the learned have seldom allowed them to draw the proper inference from them.

SECTION IV.—*Confirmation of this conclusion by other and distinct Proofs or Testimonies.*

i. Testimony of Festus Avienus.

It has always, for example, been known to the learned, that Festus Avienus, in his Aratea Prognostica, though he did not in so many words affirm the fact of a double beginning of the Attic year, one, before the time of Meton, in the winter, the other, after his time, in the summer, yet did very clearly imply it. And though it has been usual with such of them as were of a contrary opinion, to undervalue a testimony opposed to their own preconceived belief, and to make light of the authority of so late a writer as Festus; yet it must now appear that he might have had better grounds for his assertion than they have given him credit for. Let his testimony however speak for itself [m].

> Non ego nunc longo redeuntia sidera motu
> In priscas memorem sedes. habet ista priorum
> Pagina, et incerta rerum ratione feruntur.
> Nam qui solem hiberna novem putat æthere volvi,
> Ut lunæ spatium redeat, vetus Harpalus, ipsam
> Ocius in sedes momentaque prisca reducit.
> Illius ad numeros prolixa decennia rursum
> Adjecisse Meton Cecropeia dicitur arte;
> Inseditque animis: tenuit rem Græcia solers
> Protinus, et longos inventum misit in annos.

[m] ver. 38 et sqq.

Sed primæva Meton exordia sumpsit ab anno,
Torreret rutilo Phœbus cum sidere Cancrum,
Cingula cum veheret pelagus procul Orionis,
Et cum cœruleo flagraret Sirius astro.

There is nothing in this representation, (understood to refer to the Attic calendar before and after the time of Meton respectively,) which will not now appear to be consistent and true; that the calendar was lunar before as well as after this time; but that before, it was the lunar octaëteris, after, it was the lunar enneakaidecaëteris; that, as the former, it began in the winter, yet not at the solstice of winter, as the latter, it began in the summer, yet not at the summer solstice, but at that period of summer when the belt of Orion and Sirius were usually seen to rise heliacally: which is a very just description of the epoch of the Metonic cycle in the natural or sidereal year, and agreeable to Aratus' representation of it still in his own time.

It is further implied in this testimony that the enneakaidecaëteris of Meton must itself have been ultimately derived from this octaëteris of the older calendar. Otherwise what could have been meant by saying that Meton added *ten* years to the *nine* of Harpalus? and that too, as we hope to see hereafter, was actually the case. It is implied also that Harpalus, the supposed author of this older cycle, was an *ancient* in comparison even of Meton: and he would be so, whether he was a contemporary of Solon, (160 years older than Meton,) or somewhat younger than he[n].

As to the phrase *Primæva exordia*, descriptive of the epoch of this cycle of Meton's, from which it has been inferred that midsummer must have been the old and original epoch of the Attic year, its meaning, in our opinion, so construed has been mistaken. The proper sense of *Primævus* in this phrase is that of *Princeps* or *Principalis*; and it is intended of nothing here in this conjunction with *exordia* but of the proper epoch of the cycle of Meton, relatively to the natural year, defined by the criteria which are next subjoined, the heliacal rising of Orion, or that of Sirius; a phenomenon of regular occurrence at a certain distance of time after midsummer. Besides which, as referrible to the time of Festus, an author of the

[n] Cf. supra, page 28, note.

fourth or fifth century, the primary epoch of a correction, which was 8 or 900 years old, might well be described as *Primæval* or *ancient**.

ii. Seat of the Intercalary month in the Cycle of Meton.

The seat of the intercalary month in any Lunar calendar is a matter of indifference, provided the month itself does not come in oftener than the law of the cycle requires. Yet the common sense of mankind, as we have already argued[o], appears to have suggested every where that its most natural place, (unless there were special reasons to the contrary,) was at the end of the year, after the last month in the calendar. The intercalary rule of the Anglo-Saxon Lunar calendar, and that of the Lunar calendar of the nations of the North of Europe in general, was an exception of this kind. That of the modern Jewish calendar is an exception also; but the reason of this is, that the first month in the modern Jewish calendar was the seventh in the old, and the first in the latter is the seventh in the former; and the intercalation follows the sixth month in the modern calendar as it followed the twelfth in the old.

It is agreed that the intercalary month in the cycle of

* In the Acharnenses of Aristophanes, v. 219, there is an allusion to an ancient Archon called Λακρατίδης: on which the Scholiast, Λακρατίδης ἀρχαῖος ἄρχων Ἀθήνησιν, ὡς καὶ Φιλόχορος. ἦρξε δὲ ἐπὶ τῶν χρόνων Δαρείου· ἐφ' οὗ πλείστη χιὼν ἐγένετο καὶ ἀπέπηξε πάντα, ὡς μὴ δύνασθαί τινα προϊέναι. Cf. Suidas, Λακρατίδης, Phot. Lex. Λακρατίδας. The Archontic Tables, for the whole of the reign of Darius, are almost a total blank. Any archon in his reign however must have entered on the first of Gamelion; and there were years in every cycle (as the 3rd, the 5th, and the 8th) in which the first of Gamelion would confine closely on the winter solstice. It is evident that an incident of this kind was much more likely to be remembered, if it happened just after the ingress of a particular archon, than six months or upwards later in the course of his official year.

A saying is attributed to Pythagoras, in the Scholia ad Iliad. B. 88: Νέον δὲ τὸ ἔαρ ἐκάλουν, καὶ νέον ἔτος . . . . πατέρα τε τῶν καιρῶν τὸν χειμῶνα Πυθαγόρας καλεῖ. But why the winter, rather than the spring, the natural epoch of the decursus of the seasons? except that in Pythagoras' time not only the Primitive solar year, but every lunar correction of it among the Greeks which had yet taken place, was beginning in the winter, and at or about the winter solstice.

[o] Supra, page 33. note: 124. note.

Meton was the second Posideon; and that the seat of Posideon (that of the first, in the common years of the cycle, that of the second, in the intercalary,) was the winter solstice. It is agreed too that Posideon was the sixth month in his calendar. And in these two circumstances, one that the intercalary month followed the sixth, the other that its seat in the natural year was the winter solstice, consisted the peculiarity of the intercalary rule of the Cycle of Meton. It should be remembered however, that both in constructing this cycle, and in publishing his calendar, Meton acted in his private capacity. He no doubt intended his calendar as an improvement on the calendar previously in use; but only in those respects which concerned the comparative merits and demerits of each, as forms of the Lunar calendar alike; and of these the intercalary rule was not one. No doubt also he made a change in the epoch of the cycle before in use, because that was essential to his scheme: but as he had no authority to alter the beginning of the civil year, or to impose his own correction on the Athenians, he left every thing else in the new calendar just as he had found it in the old; and, in particular, the order, and decursus, and names of the months, and the intercalary rule. The seat of the intercalary month then in any cycle being a matter of indifference in itself, and in the old Lunar calendar of his countrymen being, *de facto,* after Posideon, Meton left it in his own correction after Posideon still.

Now Posideon, in the calendar of Meton, having been confessedly the sixth month, Posideon in the old calendar must have been the twelfth; and the second Posideon, the seventh month in the intercalary years of the Metonic cycle, must have been the thirteenth in the same years in the old calendar. The seat of the first Posideon then in the common years of his cycle, and that of the second in the intercalary, was an infallible indication of the end of the year in the old calendar, in both these kinds of years alike. And Posideon, either the first or the second in the new calendar, always falling at the winter solstice, the end of the year in the old calendar must always have done the same. The first month consequently in that calendar must always have been the month next after the solstice; not the solstitial month itself, but the month next after it: and this is an exact description of the site of Gamelion in the Octaëteris of Solon, relatively to the winter solstice, whether the mean Dec. 28. or the true Dec. 27, in every year of the cycle alike; as any one may see from the inspection of the scheme of the cycle itself, proposed supra[p].

SECTION V.—*On the Correction of the Archontic Tables before* B. C. 432, *required by the above conclusions.*

The conclusion, which may now be considered for the first time established so as no longer to be open to doubt and controversy, viz., that the proper beginning of the Athenian civil year, from the time of Solon to that of Meton, must have been in the month Gamelion, is attended with *this* inconvenience, that it disturbs the arrangements of the Tables of archons, from B. C. 592 down to the date of the Metonic correction; those at least which have been constructed upon the hypothesis that every archontic year, whether before or after the Metonic correction, bore date on the first of Hecatombæon. And these are the Tables generally received at present. Yet between this hypothesis and the truth, if we are right in our own conclusions, there must be a difference of six months at least, for the whole of this period. Every archontic year, down to the time of the adoption of the Metonic correction, supposed to have entered on the first of Hecatombæon instead of the first of Gamelion, must involve an error of six months in comparison of the truth. This is no doubt an inconvenient consequence of the discovery of the truth; but one which cannot now be avoided, and for which, not the discovery of the truth at last, but the error of assumption, so contrary to it, and so long persisted in, is alone to blame.

And yet the error itself is easily rectified. There is no necessity to call in question the correctness of the archontic Tables in other respects; especially in regard to the succession of archons *inter se.* After the labours of so many learned men, (Corsini, Wesseling, and Mr. Clinton, the author of the Fasti Hellenici,) it may safely be taken for granted that every year which has an archon eponymus, in these

[p] Page 34. and vol. iii. Appendix, Table i.

Tables, from B. C. 592 to B. C. 432, is assigned to its proper representative in the order and series, at least. With respect to the particular time of the year at which each went in or out of office—without disturbing the general succession, there was *a priori* room for a possible error, if the official ingress at Athens was different at different times, and this distinction happened to be overlooked—as in fact it has hitherto been, (or at least has not been taken into account,) in all the Tables which have been compiled in modern times.

Every archontic year then, according to these arrangements, from B. C. 592 to B. C. 432, anticipating six lunar months on the truth; (i. e. beginning on the first of Hecatombæon instead of on the first of Gamelion, next after it;) this error is easily corrected by lowering the ingress of each six lunar months, from the first of Hecatombæon in a given year to the first of Gamelion in the next. And generally speaking, from B. C. 592 to B. C. 432, this correction, for all practical purposes, will be found sufficient; though whether particular difficulties may not still be connected with particular existing arrangements, we are not prepared to say; nor in fact, without a circumstantial consideration of every fresh archontic ingress, we could not undertake to say.

It is certain however that, as a general rule, this correction, of lowering the ingress to the first of Gamelion next ensuing, from the first of Hecatombæon before it—will be competent to reconcile the present arrangements to the truth of history, from B. C. 592 to B. C. 432; and for the rest of the interval, from B. C. 432 to the date of the adoption of the Metonic calendar, what further correction may be necessary, will be explained by and by. And if, as a consequence of this correction, we take away six months from the term hitherto assigned to a particular archon; as a consequence of it also, we assign him six months to which he has not hitherto been supposed entitled. And though it is very possible that difficulties of various kinds may arise out of this abridgment, and this enlargement, of every official year at Athens, for so long a period of time—yet that there are similar difficulties even in the existing arrangements, and difficulties which cannot be removed except by postdating the ingress of a particular archon, may be proved from actual cases of the fact. Nor can we appeal to a better example of this kind than the archontic date of the correction of Meton itself. This date was the year of Apseudes; and the year of Apseudes, according to the Tables, entered on Hecatombæon 1, B.C. 433. Let us then briefly consider whether the circumstances of the publication, as they have been handed down, are more consistent with the common date of the ingress of Apseudes, Hecatombæon 1, B.C. 433, or with the corrected one, Gamelion 1, B.C. 432.

SECTION VI.—*On the date of the year of Apseudes, as ascertained by that of the publication of the Correction of Meton.*

The scholiast on the Aves of Aristophanes, commenting on a passage in which Meton was mentioned by name[q], gives the following account both of him and of his correction: *Μέτων, ἄριστος ἀστρονόμος καὶ γεωμέτρης. τούτου ἐστὶν ὁ ἐνιαυτὸς ὁ λεγόμενος Μέτωνος. φησὶ δὲ Καλλίστρατος ἐν Κολωνῷ ἀνάθημά τι εἶναι αὐτοῦ ἀστρολογικόν . . . ὁ δὲ Φιλόχορος ἐν Κολώνῳ μὲν αὐτὸν οὐδὲν θεῖναι λέγει, ἐπὶ Ἀψεύδους δὲ τοῦ πρὸ Πυθοδώρου ἡλιοτρόπιον ἐν τῇ νῦν οὔσῃ ἐκκλησίᾳ πρὸς τῷ τείχει τῷ ἐν τῇ Πυκνί.* These words *ἐπὶ Ἀψεύδους δὲ*, were formerly read *ψεύδους δὲ πρὸ Πυθοδώρου*—in which it was easy to trace the true reading. Apseudes in all the Tables is the Archon who immediately preceded Pythodorus: and that the correction of Meton was actually published in *his* year is attested by Diodorus Siculus[r], as well as by Philochorus. It appears, however from this testimony that the correction was published in that particular archontic year by being set up in the Pnyx, *πρὸς τῷ τείχει*; i. e. as we must suppose, by being engraved on stone or brass, in this particular year, and then made public by being attached to the wall in the Pnyx, in this year also.

Now we learn from Ptolemy that, as the first preliminary to the construction of his calendar, both solar and lunar, Meton, assisted by Euctemon, had to determine the date of the summer solstice, which he intended to assume as the epoch; and we are told that the date of the solstice

[q] Verse 998. cf. Suidas, Μέτων. [r] xii. 36.

so determined was Phamenoth 21, Nabon. 316—the reduction of which to the Julian calendar of the time being gives it June 27, B.C. 432[s]. It follows that Meton's calendar, whether solar or lunar, could not yet have been completed, much less set up in the Pnyx, before June 27, B.C. 432.

Now, according to the common arrangements of the Tables, the year of Apseudes entered Hecatombæon 1, B.C. 433, and the year of Pythodorus Hecatombæon 1, B.C. 432. Moreover it is agreed among chronologers that the Attic date of the Metonic correction being Hecatombæon 1, B.C. 432, the Julian date of that Attic one was either July 15 or July 16 the same year. Apseudes then, according to the common arrangements, was still in office as late as July 14 or July 15, B.C. 432: and Meton's correction not having been completed, much less set up and made known to the world, by June 27, the same year, we appeal to the common sense of our readers, whether the details of so complicated a thing as his Parapegma, both solar and lunar and sidereal, (of which we may form some idea, though only an incomplete and imperfect one at present, from the abstract of it given by Geminus[t],) could all have been digested, and all been engraven on stone or brass, and erected in the Pnyx, in the short interval between June 27 and July 14 or 15, when Apseudes must have gone out of office and Pythodorus must have come in *.

If this however is not probable—and yet the actual

* If the Correction, under such circumstances, must have been actually completed and published only in the year of Pythodorus, it may very reasonably be asked, why it should always have been dated Ἐπὶ Ἀψεύδους, and not Ἐπὶ Πυθοδώρου? It would be no answer to say that possibly the greater part of the calendar might have been got ready under Apseudes,—if the whole was actually published under Pythodorus. The rule in all such cases was to date by the Archon, contemporary with the completion of a certain business, not by the one contemporary with the preparation. The great expedition to Sicily, B.C. 416–415, was all got ready ἐπὶ Ἀριμνήστου; but because it set sail on or after, not before, the first of Hecatombæon, B.C. 415, it is usually dated Ἐπὶ Χαβρίου, who succeeded to Arimnestus. We have no doubt ourselves that Meton's Parapegma was both digested and published ἐπὶ Ἀψεύδους, and had that archon's name and year prefixed to it by the author himself.

s Magna Compositio, iii. ii. 162. cf. our Fasti Catholici, i. 155. ii. 409.

t Uranologium, 64. sqq. Cap. xvi.

completion and the actual publication of his calendar must still have taken place under Apseudes; what alternative is there, except to suppose that the year of Apseudes, instead of entering on Hecatombæon 1, B. C. 433, did really enter on Gamelion 1, B. C. 432? On that supposition all difficulty vanishes; and testimony on this point is reconciled with probability and the reason of things. Meton might be only determining his principal date, June 27, B. C. 432:—and yet have the whole of his Parapegma digested, and committed to stone or brass, and set up in the Pnyx—within less than six months afterwards. The necessity then of the correction of the archontic arrangements for which we are contending, in this instance at least, in our opinion is demonstrated by this example of a date, uniformly referred to that year, and yet not otherwise reducible within its limits. And being moreover the date of the Metonic correction itself, it is as apposite to our purpose at present as any which could have been mentioned.

SECTION VII.—*On the Correction of the Archontic Tables after* B. C. 432.

Besides however the correction which is necessary from B. C. 592 to B. C. 432, another has also to be taken into account, between B. C. 432 and the date of the adoption of the Metonic calendar, which was not the year of its publication, but seven years later: and the additional correction, required for this period, (or rather for some one year of the period, which we believe to have been the *year* of the adoption,) is either the abridgment of the term of office for the time being, by six months less, or its enlargement by six months more than usual—by supposing it a term of six months, or a term of 18 months, instead of one of 12. The reason is, that whensoever the style was changed, the beginning of the official year was changed also; and if it was beginning in Gamelion before the change, and it began in Hecatombæon ever after, the necessity of the case obliges us to suppose, that the archon before in office either was continued six months longer than usual, or went out six months sooner than usual. Either of these contingencies was possible *a priori*, but the latter, in our opinion, is the more probable of the two. There is no reason to suppose a new archon would not enter on the first of Gamelion before the change; and still less that a new one would not come in with the change itself. For how was the alteration of style, and of the beginning of the year, which accompanied it, to be marked and notified, but by the change of the archon eponymus? On every account nothing would be antecedently more probable than that whensoever, among the communities of the ancient Greeks, a change took place in the beginning of the year, a change would be made in the magistrates, who signed and sealed the Fasti.

It will follow on this supposition that in some year between the publication of the correction of Meton, and its adoption at Athens, (and that year the year of the adoption itself,) there must have been two eponyms; one who came in on the first of Gamelion, six months before the change, and one who came in on the first of Hecatombæon, along with the change. This then is another very material point in the rectification of the archontic Tables; though it properly affects only one year in particular, which we believe to have been B. C. 425. But this one year is the most important in the whole series of archontic years, being that in which the hypothesis, which lies at the bottom of the archontic arrangements at present, first began to be matter of fact, and the error of anticipation, which holds good in every other instance, first disappears: for Stratocles, the archon in the Tables B. C. 425, was really the first who entered on the first of Hecatombæon; and Euthydemus, the archon of the year before, was the last who entered on the first of Gamelion.

Now if there was this one year, which had two eponyms in the space of six months, it is easy to see that unless that circumstance of distinction was kept in mind, and constantly attended to, an error of reckoning in Attic chronology was very likely to be the consequence. This reckoning being kept in archontic years, and every archon whose name appeared in the list being reckoned equivalent to a year, it is manifest that in calculations of the intervals from B. C. 425 upwards, according to such a rule, the number of years, judged of in this manner from the number of the names of archons, was very likely to be reckoned at one more than the truth; because there was one more in the series of archons than years for each.

Proofs of such mistakes in the reckoning of archontic years, and of mistakes, amounting to *one* year, but only one year, and in excess not in defect of the truth,—mistakes consequently which must have been produced in this way, and can be explained only on this principle,—are actually on record. It has often been remarked, that the archontic years of the Parian Marble, from the lxiid epoch downwards, the year of Astyphilus, later than B.C. 425, agree with those of the Tables; from the lxth epoch upwards, the year of Diphilus, before B. C. 425, they anticipate one year upon them. The archontic years of the Tables down to B. C. 425 being six months in anticipation, those of the Marble on this principle must be eighteen months: and that would be the case if the archontic years of the Marble, both before and after B. C. 425, were reckoned from the same epoch as those of the Tables, Hecatombæon 1, perpetually, and before B. C. 425, included one archontic year more than the truth. As a specimen however of the kind of reckoning to which we are alluding, from an epoch later than B. C. 425 to one before it, and of the oversight thereby committed—we shall be satisfied with appealing to one example; that of the birth and the death of Socrates, and of the interval from the one to the other, as it is ordinarily represented, and as it must in reality have stood.

SECTION VIII.—*On the date of the birth and that of the death of Socrates; and on his age at his death, reckoned in Archontic years and according to the truth respectively.*

The date of the birth of Socrates, according to Suidas [v], was Ol. lxxvii., but if his numbers are not corrupt, he makes him live to be 80. The Parian Marble [x] dates his death 136 years before its own epoch, B. C. 264, i. e. B. C. 400, and in the archontic year of Laches; which also, according to the Tables, entered Hecatombæon 1, B. C. 400, and went out Skirrhophorion 30, B. C. 399. Apollodorus, according to

[v] Σωκράτης. Cf. also in Δημόκριτος. Cf. also Diogenes Laertius, Democritus, ix. cap. vii. 41. [x] Epocha lxvii.

Diogenes Laertius[y], and also Demetrius Phalereus, dated his birth Ἐπὶ Ἀψηφίωνος, and Ol. lxxvii. 4; and his death Ol. xcv. 1, at 70 years of age. By Diogenes himself his death is dated the year after the Anabasis of Cyrus the younger[z], which he dates Ἐπὶ Ξεναινέτου; and Xenænetus in the Tables was the archon immediately before Laches. It is dated in the year of Laches by Aristides the sophist also[a]: *Καίτοι ἐτελεύτησε μὲν Σωκράτης ἐπὶ Λάχητος ἄρχοντος*: and he specifies the number of archons, in succession, from Laches to Theodotus, fourteen in all; wherein he agrees with the Tables, from B. C. 400—B. C. 387.

The date of the Death then, the year of Laches, B. C. 400–399, may be considered a well ascertained point: and the date of the Birth is equally well ascertained, Ἐπὶ Ἀψηφίωνος: only that as Apsephion, according to the Tables, entered Hecatombæon 1 B. C. 469, this will have to be corrected by Gamelion 1 B. C. 468. But with respect to his age at his death; we see that in the most authoritative of the preceding statements it is represented at 70 years[b]. It is agreed however that he was born on the 6th of Thargelion; as Plato was on the 7th.[c] It is agreed also that the time of his death coincided in general with that of his birth; that is, he was condemned to death a day or two before the annual ceremony of the *Δήλια*, celebrated on or about the 6th of Thargelion: and was put to death a month afterwards*. The

* The actual date of the trial and condemnation and death of Socrates has not been handed down; yet there is reason to believe he was tried and condemned a few days before the recurrence of the Delia, and consequently some time early in the month Thargelion; and was put to death a month afterwards. That the anniversary of the Delia was at hand, at the time of his trial, we learn from the Phædo of Plato[1]: *Τύχη τις αὐτῷ ὦ Ἐχέκρατες συνέβη· ἔτυχε γὰρ τῇ προτεραίᾳ τῆς δίκης ἡ πρύμνα ἐστεμμένη τοῦ πλοίου ὃ εἰς Δῆλον Ἀθηναῖοι πέμπουσιν.* The ship therefore set sail on the day of the trial, or the day before it: and that having been the case, though he was tried and condemned the same day, yet, for the reason

[y] Vita, ii. cap. v. § xxiii. 43.

[z] Vita Xenoph. ii. cap. vi. § xi. 55, 56.

[a] Oratio xlvi. 370. l. 9. *Ὑπὲρ τῶν τεττάρων.*

[b] Cf. also Maximus Tyrius, ix. 8: Libanius, Opp. iii. 12. l. 16: Oratio lii. *Σωκράτους ἀπολογία.*

[c] Diogenes, Vita, ii. v. § xxii. 43: Plato, iii. cap. i. § ii. 2: Plutarch, Symposiaca, viii. i. and ii. cap. x: Ælian, Variæ, ii. 25: Apuleius, i. 158 a. De Habitudine, i. ad principium.

[1] Opp. Pars ii. Tom. iii. 4. 1.

6th of Thargelion in the year of Apsephion would be the 6th of Thargelion B. C. 468: and the 6th of Thargelion in the year of Laches, the 6th of Thargelion B. C. 399: and from

which Plato subjoins, his sentence could not be executed before the return of the ship, howsoever long that might be. Τοῦτό ἐστι τὸ πλοῖον, ὥς φασιν Ἀθηναῖοι, ἐν ᾧ Θησεύς ποτε εἰς Κρήτην τοὺς δὶς ἑπτὰ ἐκείνους ᾤχετο ἄγων, καὶ ἔσωσέ τε καὶ αὐτὸς ἐσώθη. τῷ οὖν Ἀπόλλωνι εὔξαντο ὡς λέγεται τότε, εἰ σωθεῖεν, ἑκάστου ἔτους θεωρίαν ἀπάξειν εἰς Δῆλον· ἣν δὴ ἀεὶ καὶ νῦν ἔτι ἐξ ἐκείνου κατ' ἐνιαυτὸν τῷ θεῷ πέμπουσιν[2]. ἐπειδὰν οὖν ἄρξωνται τῆς θεωρίας, νόμος ἐστὶν αὐτοῖς ἐν τῷ χρόνῳ τούτῳ καθαρεύειν τὴν πόλιν, καὶ δημοσίᾳ μηδένα ἀποκτιννύναι, πρὶν ἂν εἰς Δῆλόν τε ἀφίκηται τὸ πλοῖον καὶ πάλιν δεῦρο. τοῦτο δ' ἐνίοτε ἐν πολλῷ χρόνῳ γίγνεται, ὅταν τύχωσιν ἄνεμοι ἀπολαβόντες αὐτούς. ἀρχὴ δ' ἐστὶ τῆς θεωρίας ἐπειδὰν ὁ ἱερεὺς τοῦ Ἀπόλλωνος στέψῃ τὴν πρύμναν τοῦ πλοίου· τοῦτο δ' ἔτυχεν ὥσπερ λέγω τῇ προτεραίᾳ τῆς δίκης γεγονός. διὰ ταῦτα καὶ πολὺς χρόνος ἐγένετο τῷ Σωκράτει ἐν τῷ δεσμωτηρίῳ, ὁ μεταξὺ τῆς δίκης τε καὶ τοῦ θανάτου.

Now when we consider that the Birthdays of Apollo and Artemis, in whose honour this festival of the Delia was celebrated, both among the Athenians in general, and at Delos in particular, were the 6th and the 7th of Thargelion; nothing can be more probable *à priori* than that these two days in that month must have been two of the Delian feriæ, even if they did not constitute the whole of them. In fact, it may be inferred from the following passage of Athenæus[3], that the date of the Delia was the same with that of the Thargelia, and consequently the 6th of Thargelion; that is, the Delia began on the 6th of Thargelion, the stated date of the Attic Thargelia: Καὶ Εὐριπίδης ὁ ποιητὴς ἐν παισὶν ᾠνοχόησε. Θεόφραστος γοῦν ἐν τῷ περὶ μέθης φησί· Πυνθάνομαι δ' ἔγωγε καὶ Εὐριπίδην τὸν ποιητὴν οἰνοχοεῖν Ἀθήνησι τοῖς ὀρχησταῖς καλουμένοις. ὠρχοῦντο δ' οὗτοι περὶ τὸν τοῦ Ἀπόλλωνος νεὼν τοῦ Δηλίου, τῶν πρώτων ὄντες Ἀθηναίων[4], καὶ κατεδύοντο ἱμάτια τῶν Θηραϊκῶν. ὁ δὲ Ἀπόλλων οὗτός ἐστιν ᾧ τὰ Θαργήλια ἄγουσιν.

The ship then which carried the annual *θεωρία* to Delos, (and which seems to have been the Paralus,) it is to be presumed, would be despatched from Athens so as to arrive at Delos by the 6th of Thargelion; which, reckoned by the Attic rule of the noctidiurnal cycle, would be the same thing as the evening of the 5th. The distance then of Delos from Athens, or the ordinary length of this voyage, is here to be taken into account. There are instances of its taking up nine days; as in the case of that of Æschines, after the cause De Corona, B. C. 330—of which he gives an account in his Epistles[5]. The distance however in a right line not being

2 Cf. Plutarch, Theseus, xxi: Callimachus, Ad Delum, 307 sqq.: Harpocration, *ἱερὰ τριήρης*: Phot. Lex. *Πάραλος*: Appendix ad Phot. *Πάραλος*: Etym. M. *ἱεραὶ τριήρεις*, *Πάραλος*: Suidas, *ἱερὰ τριήρης*, *θεωρὶς*, *Πάραλος*: Schol. ad Septem contra Thebas, 841, 842: Scholia in Dem. contra Meidiam, 227. ad 108. 6. *τῆς Παράλου*: Harpocration, *Δηλιασταί*: Hesychius, *Δηλιασταί*.

3 x. 24.

4 This dance was called the *Γέρανος*, and is described by Pollux, iv. xiv. § 101, p. 407. cf. Plutarch, Theseus, xxi: Hesychius, *Γερανοῦλκος*, *Γέρανος*.

5 A. I. 1–6.

the 6th of Thargelion B.C. 468 to the 6th of Thargelion B.C. 399—the age of Socrates could not have been more or less

more than 100 Roman miles, it could not ordinarily occupy more than two days—especially in the month Thargelion, in which the wind Σκείρων (of which we gave an account supra [6]) was liable to blow; for that was a wind in favour of the voyage from Athens to Delos, though adverse to it in the opposite direction. We may presume then that the poop of the *θεωρὶς* would seldom be crowned before the fourth of Thargelion; and if that was the case on this occasion, then it must have set sail on the fourth, and Socrates must have been tried on the fifth.

This same wind Σκείρων, being liable to blow many days, if it set in at the beginning of Thargelion, might continue to blow for the greater part of that month; and if it did so on this occasion, the ship would be detained proportionately longer. The actual interval between the trial and condemnation, produced by this delay, which Plato gave us to understand was something considerable, Xenophon tells us was 30 days [7]: *Ἀνάγκη μὲν γὰρ ἐγένετο αὐτῷ μετὰ τὴν κρίσιν τριάκοντα ἡμέρας βιῶναι διὰ τὸ Δήλια μὲν ἐκείνου τοῦ μηνὸς εἶναι, τὸν δὲ νόμον μηδένα ἐᾶν δημοσίᾳ ἀποθανεῖν ἕως ἂν ἡ θεωρία ἐκ Δήλου ἐπανέλθῃ*—which on this principle must have been from the fifth of Thargelion to the fifth of Skirrhophorion—an interval, B. C. 399, Cycle ii. 14, when Thargelion happened to be a full month, actually one of 30 days: from May 17 Thargelion 5 to June 16 Skirrhophorion 5. It might possibly be inferred from the Crito of Plato that the actual date of his death must have fallen out somewhere about the 3d or 4th of this month; at least if the conversation there recorded may be supposed to have passed on the first of the month [8]: *Ἐγώ σοι ἐρῶ· τῇ γάρ που ὑστεραίᾳ δεῖ με ἀποθνήσκειν ἢ ᾗ ἂν ἔλθῃ τὸ πλοῖον . . . οὐ τοίνυν τῆς ἐπιούσης ἡμέρας οἶμαι αὐτὸ ἥξειν, ἀλλὰ τῆς ἑτέρας* [9]. This conversation was most likely to have passed on the first of Skirrhophorion, June 12: and if it did, it will imply that the ship arrived, according to the prognostic of Socrates, the day but one after; that is, on the evening of the third; and his death took place the next day, that is, on the fourth, June 15—exactly on the 30th day from that of his condemnation—May 17. And this is consistent with the Phædo [10]: Τῇ *γὰρ προτεραίᾳ ἡμέρᾳ ἐπειδὴ ἐξήλθομεν ἐκ τοῦ δεσμωτηρίου ἑσπέρας, ἐπυθόμεθα ὅτι τὸ πλοῖον ἐκ Δήλου ἀφιγμένον εἴη· παρηγγείλαμεν οὖν ἀλλήλοις ἥκειν ὡς πρωϊαίτατα εἰς τὸ εἰωθός.* This would be the evening of June 14, Skirrhophorion 3. The death took place the next day, a little before sunset, June 4, and consequently still on the 5th of the month: Καὶ *ἦν ἤδη ἐγγὺς ἡλίου δυσμῶν* [11]—Καὶ *ὁ Κρίτων· Ἀλλ' οἶμαι ἔφη ἔγωγε ὦ Σώκρατες ἔτι ἥλιον εἶναι ἐπὶ τοῖς ὄρεσι, καὶ οὔπω δεδυκέναι* [12].

If this account of the chronology of these proceedings is correct; So-

6 Page 110. *n.*

7 Memorabilia, iv. 8. § 2. cf. Seneca, Opp. ii. 326. Epp. lxx. 7.

8 Pars i. Tom. ii. 145. 2.

9 Cf. ad l. 12. *ἤματί κεν τριτάτῳ κ',τ.λ.*

10 ii. iii. Pag. 7. 19.

11 ii. iii. 123. 19.

12 Ibid. 124. 18. cf. Stobæus, Florilegium, i. 162. Titulus v. 67 Teles.

than 69 years complete. The result is the same, if you reckon from the 6th of Thargelion Ol. lxxvii. 4 to the 6th of Thargelion Ol. xcv. 1.

If then he died only a month after the 6th of Thargelion B. C. 399; how does it happen that his age at the time of his death is uniformly represented as 70? The true explanation probably is what we have suggested; that though there were but 69 years complete between Thargelion 6 B. C. 468 and Thargelion 6 B. C. 399, there were 70 archons; the first of them Apsephion, the archon of the year of the Birth, and the last Laches, the archon of the year of the Death: and any one, who merely counted the number of archontic names be-

crates must have been tried and condemned on Thargelion 5—the day before his birthday, Thargelion 6: when he must have been 69 years old complete. Xenophon has not told us his age at his death: he has given us merely to understand that he was far advanced in years at the time of his trial, and even had he not been then condemned, could not have expected to live much longer: Ἐννοησάτω πρῶτον μὲν ὅτι οὕτως ἤδη τότε πόρρω τῆς ἡλικίας ἦν, ὥστ' εἰ καὶ μὴ τότε, οὐκ ἂν πολλῷ ὕστερον τελευτῆσαι τὸν βίον [13]. Plato, in the speech which he puts into his mouth, makes him say of himself he was even more than 70 [14]: Νῦν ἐγὼ πρῶτον ἐπὶ δικαστήριον ἀναβέβηκα, ἔτη γεγονὼς πλείω ἑβδομήκοντα—Ὁρᾶτε γὰρ δὴ τὴν ἡλικίαν, ὅτι πόρρω ἤδη ἐστὶ τοῦ βίου, θανάτου δὲ ἐγγύς [15]. Plato's inaccuracy in chronological statements is well known [16]; and yet it is scarcely credible that he could have been ignorant of the age of Socrates at his death; nor if Socrates was really tried and condemned on the very last day of his 69th year, could this statement of his age at the time of his trial be excused even on the ordinary principle of reckoning the first day of his 70th year equivalent to a year: for he could not yet have entered on that day when he was condemned. Nor is it probable perhaps that if Plato had written this Apologia at the time of the trial, or directly after it, we should have found such a statement in it. But if he wrote it long after the death of Socrates, then, looking simply at the number of archons from the birth of Socrates to his trial and condemnation, (that is, from Apsephion, under whom he was born, to Laches, under whom he was condemned,) and finding them to be 70, he might put into the mouth of Socrates, even such a statement as this of his being 70 at the time of his trial: though even on that principle it must have been in excess of the truth to represent him as more. His exact age from Thargelion 6 May 7 B. C. 468 to Thargelion 5 May 17 B. C. 399, in Attic time must have been 69 years complete; in Julian must have been 69 years, and ten days over of a 70th.

13 Memorabilia, iv. viii. 1.
14 Opp. i. ii. 90. 14. Apologia.
15 Ibid. 133. 11.
16 Cf. Athenaeus, v. 55–60.

tween the Birth and the Death, could scarcely fail to represent his age at his death accordingly.

It may be mentioned, as a singular coincidence, that a fact is recorded in Plutarch's Life of Kimon, which belongs to the year of Apsephion; and serves to illustrate our conclusion that the official year of the magistrates of all kinds at Athens, at this time, must have been beginning in Gamelion. This archonship is noted in the Parian Chronicle[d] as the date of the first victory of Sophocles in tragedy, when he was 28 years of age; 206 years before its own epoch, B. C. 264—i.e. B.C. 470, of the archontic reckoning of the marble, as explained supra. The story referred to in Plutarch reflects much light on the circumstances of the victory[e]: Ἔθεντο δ' εἰς *μνήμην αὐτοῦ καὶ τὴν τῶν τραγῳδῶν κρίσιν ὀνομαστὴν γενομένην. πρώτην γὰρ διδασκαλίαν τοῦ Σοφοκλέους ἔτι νέου καθέντος, Ἀφεψίων ὁ ἄρχων, φιλονεικίας οὔσης καὶ παρατάξεως τῶν θεατῶν, κριτὰς μὲν οὐκ ἐκλήρωσε τοῦ ἀγῶνος· ὡς δὲ Κίμων μετὰ τῶν συστρατήγων προελθὼν εἰς τὸ θέατρον ἐποιήσατο τῷ θεῷ τὰς νενομισμένας σπονδὰς, οὐκ ἀφῆκεν αὐτοὺς ἀπελθεῖν. ἀλλ' ὁρκώσας, ἠνάγκασε καθίσαι καὶ κρῖναι, δέκα ὄντας, ἀπὸ φυλῆς μιᾶς ἕκαστον. ὁ μὲν οὖν ἀγὼν καὶ διὰ τὸ τῶν κριτῶν ἀξίωμα τὴν φιλοτιμίαν ὑπερέβαλε. νικήσαντος δὲ τοῦ Σοφοκλέους λέγεται τὸν Αἰσχύλον, περιπαθῆ γενόμενον καὶ βάρεως ἐνεγκόντα, χρόνον οὐ πολὺν Ἀθήνῃσι διαγαγεῖν, εἶτ' οἴχεσθαι δι' ὀργὴν εἰς Σικελίαν, ὅπου καὶ τελευτήσας περὶ Γέλαν τέθαπται.*

From the circumstance here made known, that the archon eponymos was presiding at these *Διδασκαλίαι*, it has been rightly inferred that the Dionysia going on at the time must have been the *Διονύσια ἐν ἄστει*: the stated date of which was in Elaphebolion—about the 11th or 12th of the month—which B. C. 168 fell March 14 and 15th respectively. Kimon and his fellow Strategi, it seems, were still at Athens at this time; i.e. had not yet set out on their command abroad. Yet it is clearly implied in the account itself that they were preparing to do so: and if so, that they must have been recently elected, and consequently their year of office must have begun in Gamelion. It is not credible that they could have been elected to a command abroad in Hecatombæon B. C. 169, and yet have been preparing to set out upon it only

[d] Epocha lvii. [e] Kimon, viii.

after the Dionysia ἐν ἄστει, that is, the middle of Elaphebolion, B. C. 468. But supposing them to have been appointed this very year, in Gamelion, B. C. 468, then, it is to be observed, as we learn from Theophrastus[f], that the stated time at which the sea was considered open again after the winter, especially for naval and military expeditions, was after this very feast—the Dionysia ἐν ἄστει—that is, the middle of this very month Elaphebolion.

There is a passage in the Pericles of Plutarch which throws light on this point also[g]: Ἑξήκοντα δὲ τριήρεις καθ' ἕκαστον ἐνιαυτὸν ἐκπέμπων, ἐν αἷς πολλοὶ τῶν πολιτῶν ἔπλεον ὀκτὼ μῆνας ἔμμισθοι, μελετῶντες ἅμα καὶ μανθάνοντες τὴν ναυτικὴν ἐμπειρίαν. The rule, it seems, in Pericles' time, (who died himself before the change of style at Athens had yet been made) was to keep a fleet at sea eight months; which must consequently have been sent out at the same time in general, and must have returned at the same time in general, every year. Reckon 8 months from the middle of Elaphebolion, as the earliest time at which the sea was considered open for fleets, and you come to the middle of Mæmacterion, as the latest time at which it might still be considered safe for the same purpose. This rule of the naval service at Athens in the time of Pericles, is probably illustrated by the history of the reduction of Samos, after operations by sea which lasted nine months[h].

It is another curious coincidence that, as we may infer from Pliny[i], one of the Plays exhibited by Sophocles on this occasion must have been his Triptolemus; of which a fragment has been quoted by Dionysius of Halicarnassus[k]. The date of this play at least, according to Pliny, was 145 years before the death of Alexander the Great; and *this* having been B. C. 323 *that* must have been B. C. 468.

[f] Cap. iii. Περὶ Ἀδολεσχίας.

[g] Cap. xi.

[h] Vita Periclis, xxviii: cf. De Gloria Atheniensium, viii. and Thucydides, i. 116, 117.

[i] H. N. xviii. 12. § 1.

[k] Ant. Rom. i. 12. cf. Strabo, i. cap. ii. pag. 42, 43.

DISSERTATION II.

PART I.

On the Verification of the Calendar of Solon.

From the date of the Correction of Solon B.C. 592 *to the date of the Battle of Marathon* B.C. 490.

CHAPTER I.

SECTION I.—*On the means of the verification in question, available for this period.*

The preliminary questions of the epoch of the first Lunar Correction among the Greeks; of the derivation of that correction from the primitive solar year; of the cycle by which it was regulated; of the laws and administrative rule of the calendar itself; of the names of the months, and the reasons on which they were founded; of the proper beginning of the official year among the Athenians in particular, from the time of this first correction to the Metonic;—these questions having all been discussed in their order, it remains that we should now pass to the *verification* of our conclusions by such means of proof as may be available for that purpose.

Proofs of this kind, in the shape of dates, taken directly from the calendar for the time being, and historically handed down, it must be admitted, even for the whole of the period from the time of Solon to that of Meton, are few in number; but some there are—and of these it may be observed that, wheresoever and whensoever they come in, they are clear and decisive. The traditionary date of the battle of Marathon verifies the calendar for the year of Marathon; that of the battle of Salamis for the year of Salamis; that of Platæa and Mycale for the year of Platæa and Mycale: and that of the battle of Salamis in Cyprus for the year of Salamis in Cyprus. In like manner, the historical date of the Metonic Correction will verify the calendar for the year of that correction. And it is almost superfluous to remind the reader that, in cases of this kind, to verify a given lunar calendar for a particular year of its proper cycle, is to verify it for the whole. The years of every cycle are necessarily dependent upon each other; and every subsequent one derives its proper character from that of the first.

We shall thus see that, for 58 years at least, from the date of Marathon to the Metonic Correction, the accuracy of our first Type of the Hellenic Octaëteric Correction, (that which we proposed supra[1] as the proper lunar calendar of Athens in particular,) admits of being put to the test by comparing it with actual dates, taken from the calendar of the time; distinct in themselves, and sufficiently numerous to supply successive criterions of the truth of any other calendar, which professed to be the actual civil calendar for the time being as much as that from which they themselves were derived. It is impossible that a calendar, which falsely laid claim to this character, could stand a practical test like this in repeated instances; and equally so that one, which was consistent with every test of this kind, and in which every recorded date held good as truly as it must have done in its own calendar at the time, could be any thing different from the actual calendar of the time.

With regard to the period from the correction of Solon, B. C. 592, to the battle of Marathon, B. C. 490, and the same kind of proofs as applicable to the calendar for that also; Greek history itself cannot be said to begin from a much earlier point of time than the first Persian invasion: nor is it any wonder that the dates of particular events, which are so rare of occurrence even in the strictly historical period, should be still more sparingly scattered, and even an entire desideratum, in the period anterior to it. Yet notwithstanding the deficiency of this period in events, of which anything is known at present; it supplies means of illustration, independent of the general course and succession

[1] Page 34.

of contemporary history — very suitable to our particular purpose.

In the course of these first 100 or 125 years from the date of the correction of Solon, we shall see proofs of five other remarkable epochs in the history of these Corrections of the Primitive solar year among the Greeks in general; each of which confirms the preceding in its proper order of time, and all confirm the first. And though there is no Greek history properly so called, for the greater part of this period; some ancient compositions are still in existence, which the common opinion of the learned refers to it—the Hymns for example, ascribed to Homer: and it may be worth while to inquire whether something is not discoverable in these poems, calculated to throw light on the nature, and even on the state, of the calendar in their time. In our opinion too, and in that of some of the learned (though not of all), the extant remains of Hesiod, (that part of them, at least, which has always been considered his genuine production, the Works and Days,) belong to this period: and it may be another, and, for our purpose, a still more interesting subject of inquiry,—What is the kind and degree of testimony to the nature or state of the calendar for the time being, which these remains of Hesiod, when they come to be examined, are seen to bear?

In fact, the proper illustration of the first lunar calendar among the Greeks, for this first part of the period between its introduction and the date of the Metonic correction, is to be found at present chiefly, if not entirely, in these two sources, the extant remains of Hesiod, and the Hymns ascribed to Homer. By way then of introduction to particular testimonies, which first begin to be available B. C. 490; we cannot do better than devote the first part of the present Dissertation to this question, of the testimony of Hesiod, and of that of the Hymns ascribed to Homer, to the nature and state of the civil calendar in the time of each; and whether it is such as could agree to the actual kind or condition of any calendar for the time being, except the first Hellenic Lunar Calendar, the Attic Correction of Solon. And though we are aware of the uncertainty which is generally, and not without reason, supposed to attach to each of these questions (that of the age of Hesiod, and that of the age of the author or authors of these Hymns); yet it is necessary to the prosecution of our proper subject that we should now enter upon them: and it is almost self-evident that the very point into which we are proposing to inquire, the testimony of each of these authorities to the nature and relations of the calendar in his own time, if it leads to any satisfactory results, must do much to decide these questions for the future. It is evident at least that if both recognise the lunar and not the solar form of the calendar, neither of them could have been older than the date of the first lunar correction among the Greeks: and if, besides this, they recognise also a certain state and relation of the calendar of their own time itself, which could not have begun to hold good before a certain time after the first lunar correction among the Greeks came into being; this will prove not only that each was later than that correction, but also, how much later: and we shall thus approximate to the true age of each. We shall make no further apology therefore for entering on these discussions, but proceed at once to that which both presents itself first in the order of time, and is also the more important and interesting of the two: The testimony of Hesiod to the nature and state of the calendar for the time being—as it may be collected from his own Works.

Section II.—*On the age of Hesiod, and the conflict of testimony on that point.*

The difference of opinion among the ancients with respect to the age of Homer, and the conflict of testimony on that point, are well known. There is the same (and if possible even greater) diversity of opinions with respect to the age of Hesiod. Extreme statements at least on this latter point are more widely removed than on the former; for while one class of ancient testimonies makes Hesiod older than Homer, another makes him younger, and not by a few years, but by three or four centuries at least.

It is easy to see then, how difficult it must be, with nothing to guide our judgment but testimony *ab extra*, to come to any decision on this question; and how desirable it is, in order to a due estimate of the different statements on this subject themselves, that we should have it in our power to refer even testimony *ab extra* to some common criterion, whereby we may judge of its credibility beforehand; in order that, if consistent with this test, it may be allowed its due weight, if not, be rejected at once, and set aside, as under no circumstances capable of being true.

Now the ultimate standard of reference in a case like this can be nothing so properly as an author's own works; which are to all intents and purposes his own testimony concerning himself. No evidence from any other quarter could be considered *a priori* so credible as this. None can be so ancient as this, except the testimony of contemporaries, which is seldom to be had: and it is peculiar to this, that as an author's account of himself, contained in his own works, as long as those works are still in existence, it can never be old, or out of date. It makes no difference to its truth or credibility, how long ago it may have been given. It is as fresh, as recent, as authentic, provided it be only genuine, at any distance after the author's own time, as at first.

No one then, we apprehend, will think of disputing the reasonableness of *this* assumption, That before we consider the extraneous testimony to the age of Hesiod, conflicting and uncertain as it is, we should begin with inquiring into the testimony of Hesiod concerning himself. Nor is it necessary that this testimony should have been given in so many words. It is sufficient if it is *virtually* given; if it is necessarily implied in what he has actually said. And as one of the modes in which an author may indirectly, yet necessarily, bear testimony to his own age is by shewing, without appearing to do so on purpose, that he was acquainted with other authors—whose age is better known; *this* is the test, which we propose to apply first of all on the present question,—viz. to shew, from the evidence of Hesiod's own writings, that he was acquainted with those of Homer, and that he has borrowed from them, or varied from them, only as a later writer could have done from an earlier one. If this point can be established, we shall thereby dispose beforehand of all that class of testimonies, which makes him older than Homer, or even a contemporary of his.

SECTION III.—*On the argument of the age of Hesiod, deducible from a comparison of Hesiod with Homer.*

i. In a critical point of view.

Preliminary however to this question, we may be permitted to assume that the productions commonly ascribed to Hesiod, and handed down under his name. The Theogonia, The Aspis, The Works and Days, and certain of his Fragments, notwithstanding the doubts which have been entertained about some of them, upon the whole are truly to be regarded as his. The genuineness of the Works and Days, indeed, has never been called in question; that of the Theogonia and that of the Aspis has been. But as all three have uniformly been ascribed to Hesiod—as all have descended together under his name, and no one has ever been mentioned to whom the authorship of the Theogonia or of the Aspis, any more than that of the Works and Days, was to be transferred from him—the most probable opinion is that he was really the author of all the three.

If then there were no other criterion, by means of which the comparative antiquity of Homer and Hesiod could be judged of, except the internal evidence of the works ascribed to each, the Iliad and the Odyssey on the one hand, the Theogonia, the Aspis, and the Works and Days on the other, and the style and diction, the metrical laws and peculiarities of each,—still it might justly be inferred from this that both these classes of ancient Greek compositions could not have belonged to the same age; that the language, the idioms, the metrical rules and proprieties of Greek poetry, between the time of the one and that of the other, must have undergone a considerable change; and yet that every thing of this kind, which tended to indicate a superior antiquity, was characteristic of the Iliad and the Odyssey, not of the remains of Hesiod *. To enter here however on a critical

* Dionysius of Halicarnassus, treating of this very question of the characters of style, classes together Hesiod, Sappho, Anacreon, Simonides, Euripides, Ephorus, Theopompus, and Isocrates, all as examples of what he calls the *γλαφυρὰ* and *ἀνθηρὰ σύνθεσις* or *λέξις*— the smooth, the easy, and the florid: De Compositione, 23. Opp. v. 173. 1–10: De Admirabili Vi &c. 40. Opp. vi. 1079. 2: cf. Rhetorica, 1. Opp. v. 227. l. 1: and De

comparison between them would exceed the limits of the present Dissertation; and may be dispensed with so far as our own purpose is concerned—because we have other proofs to produce, which will shew not only that Hesiod must have been later than Homer in general, as a comparison of this kind might also do—but how much later in particular—which this criterion alone would not be competent to do.

ii. From the proofs which appear in the Hesiodic writings of imitations of those of Homer, or of differences from them, or of additions to them, which must have been purposely made.

The modern editions of Hesiod sometimes enclose parts of the Works and Days and of his other poems in brackets; as if there were reason to suspect such passages. In many of these instances however the passages themselves exhibit a close resemblance to something which occurs in Homer; and it may very well be questioned whether the suspicion attached to them is not ultimately resolvable into the prejudice, so generally entertained in modern times, that Hesiod was too nearly on a par in point of age with Homer, to have borrowed any thing from him, or even to have been acquainted with his productions. And if this prejudice should turn out to be unfounded, such passages may retain the place which

Vett. Scriptor. Cens. cap. ii. 2. Opp. v. 419. l. 5. It might well appear extraordinary to find Homer in the same category with Euripides and Isocrates, neither of them less than five hundred years younger than Homer: but not so Hesiod, between whose time and that of the other two there was probably not much more than a century. The first four here enumerated, Hesiod, Sappho, Anacreon, and Simonides, were actually more or less contemporaries. The thing to be observed however is that the distinctive quality of style, which in the opinion of this eminent critic, characterized them all alike, the elegant, the polished, and florid, is one which never did, nor in the nature of things ever could have formed one of the genuine notes of antiquity. It is a character of comparatively late growth, the effect of time and improvement in some things, accompanied with loss or diminution in others. The character most opposed to this would be that of τὸ τραχὺ and τὸ αὐστηρὸν, combined with the strong and nervous, as the proper characteristic of the earliest school of writing: and what a later age would gain by exchanging this for ease, and grace, and external polish, it would lose in strength, and depth, and substance.

they have always occupied in the text of Hesiod, until better and more critical reasons require their removal from it.

The scholiasts and commentators of antiquity, who had access not only to all those productions of Hesiod which are still in existence, but to a great many more which are known to us only by name, or by means of a few fragments—remarked frequent instances in which he appeared to have derived his ideas from Homer, to have imitated the language of Homer, or even to have differed from it in such a manner as to imply that the difference was not accidental [m]; all which would imply that he must have been well acquainted with the Iliad and the Odyssey. Examples of this sort we will proceed to adduce.

i. *Οὐδὲ Θέτις μήτηρ· γλαυκὴ δέ σε τίκτε θάλασσα.* Iliad, Π. 34.

Here the scholiast observes that this epithet *γλαυκὴ*, applied to the sea, gave occasion to Hesiod's use of it as a proper name of the sea itself—as which it occurs in the Theogonia [n].

Καὶ τοῖς οἳ Γλαύκην δυσπέμφελον ἐργάζονται.

And on Od. Λ. 633—

Μή μοι Γοργείην κεφαλὴν δεινοῖο πελώρου—

he remarks, that the account of the Gorgon in the Theogonia [o] was founded on this hint. Hesychius also observes [p] that Hesiod mistook the sense of these words: which implies that he had seen them at least. The scholiast remarks also [q], (after Philoxenus,) that the description of the Cyclopes in general in Hesiod was founded on a similar misapprehension of Homer's account of Polyphemus in particular *.

* And though Virgil agrees with Hesiod in putting the same construction on the words of Homer (Æn. iii. 636), it is still true that Homer does not assert of Polyphemus, much less of the rest of the Cyclopes, that they had only one eye, and that so situated as Hesiod represents it to have been; even though he may be considered to imply it of the former by supposing that the loss of the *one* eye, put out by Ulysses, reduced him to a state of total blindness. It makes no difference to our own argument whether Hesiod construed Homer rightly or wrongly in this instance—if

[m] Cf. Eustathius, ad. Il. B. 527. 277. 2: Schol. ad Il. E. 880: K 431: Λ. 750: Ξ. 200: Υ. 227: Φ. 528: Ψ. 638. 683: Ω. 527: (cf. Eustath. 1363. 24. Ω. 528): Odyss. A. 52. 85: H. 54: Θ. 362: Λ. 197.

[n] v. 440

[o] 274. sqq.

[p] *Γοργείην κεφαλήν.*

[q] Ad Od. I. 106. cf. Anecdota Græca Oxoniensia, i. 254. 1–17.

Οἱ δή τοι τὰ μὲν ἄλλα θεοῖς ἐναλίγκιοι ἦσαν,
μοῦνος δ' ὀφθαλμὸς μέσσῳ ἐπέκειτο προσώπῳ [r].

And as parallel to Od. H. 104—

Αἱ μὲν ἀλετρεύουσι μύλης ἔπι μήλοπα καρπόν—

he quotes the following from Hesiod—without saying from which of his works he took it:

Ἀλετρεύουσι μύλης ἔπι μήλοπα καρπόν.

Ἐπὶ τῆς ἠλακάτης τῆς στρεφομένης δίκην μύλης—though no such line occurs in the fragments of Hesiod at present.

ii. Before the encounter of Kycnus and Hercules in the Aspis, the following image occurs—

Μέγα δ' ἔκτυπε μητίετα Ζεύς,
κὰδδ' ἄρ' ἀπ' οὐρανόθεν ψιάδας βάλεν αἱματοέσσας,
σῆμα τιθεὶς πολέμοιο ἑῷ μεγαθαρσέϊ παιδί [s].

The same image is found in the Iliad, before the encounter of Sarpedon and Patroclus [t].

Ὣς ἔφατ'· οὐδ' ἀπίθησε πατὴρ ἀνδρῶν τε θεῶν τε.
αἱματοέσσας δὲ ψιάδας κατέχευεν ἔραζε,
παῖδα φίλον τιμῶν, τόν οἱ Πάτροκλος ἔμελλε
φθίσειν ἐν Τροίῃ ἐριβώλακι τηλόθι πάτρης.

It is not probable that so remarkable an idea should have occurred to two minds, under circumstances so very different in each instance; to one, when the son of Jupiter was about to perish, to the other, when he was about to conquer. It is manifest that a particular prognostic of the contest and its destined result, like this, was much more natural and appropriate as Homer has introduced it, than as Hesiod has done: for these *rores sanguinei,* this rain or drops of blood, were such tears as Jupiter might well be supposed to have shed for the approaching death of his son; and were as much a natural expression of his grief at the foreseen result of the contest, as in honour of Sarpedon. But in the Aspis they can have no meaning, and can serve no purpose, but that of bloody tokens of a bloody combat; and would have done just as well by way of prelude to a battle between any two of the heroes of antiquity, in which one or both were likely to fall. It is an image therefore out of its place in the Aspis, and consequently introduced only in imitation of the Iliad.

he had only seen him; and that he must have done, to have known any thing of the Cyclopes at all—a race of beings, whether one-eyed or not, which never had an actual existence except in the Odyssey of Homer.

r Theogonia, 139–146. s v. 383. t Π. 458.

iii. The comparison of motion, as conceived to be instantaneous, or the quickest imaginable, (consistently with the idea of motion or change of place at all,) to a thought of the human mind, occurs twice in Homer, once in the Iliad, to give an idea of the rapidity of the movements of Hera—

> Ὡς δ' ὅτ' ἀναΐξῃ νόος ἀνέρος, ὅστ' ἐπὶ πολλὴν
> γαῖαν ἐληλουθὼς φρεσὶ πευκαλίμῃσι νοήσῃ,
> ἔνθ' εἴην, ἢ ἔνθα· μενοινήσειέ τε πολλά·
> ὣς κραιπνῶς μεμαυῖα διέπτατο πότνια Ἥρη [v].

And once in the Odyssey, to describe the rapidity with which the ships of the Phæacians traversed the sea—

> Τῶν νέες ὠκεῖαι ὡσεὶ πτερὸν ἠὲ νόημα [x].

It is far from improbable that this expressive simile was first used by Homer; and every one must admit that, introduced and applied as it is by him, it is as just and proper, as it might have been original. The later Greek poets appear to have been much struck by it, and to have lost no opportunity of copying it. The longer comparison of this kind occurs in Apollonius Rhodius [y]; the shorter one, twice even in the Hymn to Apollo [z]. It occurs in Theognis, to describe one of the most shortlived and transitory of the blessings of nature, the Prime and Bloom of youth, and therefore with perfect propriety.

> Αἶψα γὰρ ὥστε νόημα παρέρχεται ἀγλαὸς ἥβη [a].

Now this comparison is found in the Aspis of Hesiod also, and there too to describe motion or change of place: but

[v] Il. O. 80. [x] H. 36. [y] ii. 543-548.

[z] Ἔνθεν δὲ πρὸς Ὄλυμπον ἀπὸ χθονὸ ὥστε νόημα. v. 186.

Ἔνθεν δ' αὖτ' ἐπὶ νῆα νόημ' ὣς ἆλτο πέτεσθαι. v. 448.

Cf. the Orphica, lxix. Eumenides.
Ἠέριαι ἀφανεῖς ὠκυδρόμοι ὥστε νόημα.

Oppian, Halieutica, v. 660, of the diver after the spunge.
Τοὔνεκα λαιψηρῶς ἀναδύεται ὥστε νόημα
ἑλκόμενος· τὸν μέν τις ἰδὼν προφυγόντα θαλάσσης
ἀμφὼ γηθήσειε καὶ οἰκτείρων ἀκάχοιτο.

Nonnus, Dionysiaca, xiv. 1. 6.
Ῥείη δ' ὠκυπέδιλος .. ..
ὡς πτερὸν ἠὲ νόημα διέστιχεν ἕδρανα κόσμου.

Ibid. xxii. 114.
Ὣς φαμένη παλίνορσος Ἁμαδρυὰς ᾤχετο Νύμφη
ὡς πτερὸν ἠὲ νόημα. Cf. also xxxii. 37

[a] Verse 979.

not instantaneous motion, or change of place so rapid as to be imperceptible, but continuous motion, and change of place, however rapid of its kind, yet passing and going on before the eyes. This is the image which he has employed to describe the flight of his Perseus, and to give an idea of its quickness :

Ὁ δ' ὥστε νόημ' ἐποτᾶτο [b].

It is manifest therefore that he has not used it with the same judgment, and the same attention to the reason of things, as Homer : from which we may infer that this simile was not an original one with him, as it probably was with Homer. Nothing can be better adapted to convey a distinct and expressive idea of an instantaneous motion than an act of thought, which is performed in an instant also ; nothing could be less suitable to the idea of continuous and uninterrupted motion, than a mental operation, like that of thinking or reflecting. An act of thought or reflection is instantaneous. There is no continuity in an act of thinking, as there must be in a succession of acts of translation through space, however rapid of their kind.

iv. The fall of Kycnus in the Aspis—

Ἤριπε δ' ὡς ὅτε τις δρῦς ἤριπεν, ἢ ὅτε πέτρη [c]—

is described almost in the very same words as that of Asius, in the Iliad :

Ἤριπε δ' ὡς ὅτε τις δρῦς ἤριπεν, ἢ ἀχερωῒς [d],

or that of Sarpedon,

Ἤριπε δ' ὡς ὅτε τις δρῦς ἤριπεν, ἢ ἀχερωῒς [e].

And as in the encounter of Mars with Hercules, Φόβος and Δεῖμος are his attendants in the Aspis, and act as his charioteers [f], so are they on similar occasions in the Iliad [g].

v. The peculiar phrase of αἰπόλια πλατέ' αἰγῶν, occurs frequently in the Iliad and the Odyssey [h], to describe that particular kind of possessions ; but only once in Hesiod :

Βουκολίας τ' ἀγέλας τε καὶ αἰπόλια πλατέ' αἰγῶν [i].

From which distinction we may infer that even as used this once, it was more probably borrowed from Homer than in-

[b] v. 222. [c] v. 421. [d] N. 389.
[e] Π. 482. [f] v. 463.
[g] Δ. 440 : cf. Λ. 37.
[h] Il. B. 474 : Λ. 678 : Od. Ξ. 101–103.
[i] Theogonia, 445.

vented by Hesiod for himself. In like manner *θυήεις*, as an epithet of *βωμὸς*, occurs only once in Hesiod [k]—

Καίουσ' ὀστέα λευκὰ θυηέντων ἐπὶ βωμῶν—

whereas *βωμός τε θυήεις* occurs thrice in Homer [l].

vi. The poetical monster the chimæra, which never had an existence except in the imagination, (whatsoever it was,) which first conceived such an idea, is very particularly described by Hesiod [m] —

Τῆς δ' ἦν τρεῖς κεφαλαί· μία μὲν χαροποῖο λέοντος·
ἡ δὲ χιμαίρης· ἡ δ' ὄφιος, κρατεροῖο δράκοντος.
πρόσθε λέων ὄπιθεν δὲ δράκων μέσση δὲ χίμαιρα,
δεινὸν ἀποπνείουσα πυρὸς μένος αἰθομένοιο.

The last two lines of this description are commonly regarded as an interpolation, because found in terms in the Iliad [n]: yet what are the first two but simply an amplification of that one line in the Iliad ? —

πρόσθε λέων, ὄπιθεν δὲ δράκων, μέσση δὲ χίμαιρα.

vii. *Δημήτηρ μὲν Πλοῦτον ἐγείνατο δῖα θεάων,*
Ἰασίῳ ἥρωϊ μιγεῖσ' ἐρατῇ φιλότητι
νειῷ ἐνὶ τριπόλῳ· Κρήτης ἐν πίονι δήμῳ [o].

Part of this was borrowed from the Odyssey [p]—

Ὡς δ' ὁπότ' Ἰασίωνι ἐϋπλόκαμος Δημήτηρ,
ᾧ θυμῷ εἴξασα, μίγη φιλότητι καὶ εὐνῇ,
νειῷ ἐνὶ τριπόλῳ.

And though *Κρήτης ἐν πίονι δήμῳ* does not occur here, yet *πίονι δήμῳ* is a standing phrase in Homer; and it might have been taken here from various places of the Iliad or the Odyssey [q].

viii. In the genealogy of rivers, as given in the Theogonia [r], one line,

Γρήνικόν τε καὶ Αἴσηπον θεῖόν τε Σιμοῦντα,

is almost word for word the same as Homer's,—

Γρήνικός τε καὶ Αἴσηπος δῖός τε Σκάμανδρος [s],—

in which nothing is changed but the end of the line; and that might have been done on purpose to get rid of the offence against the laws of metre. The names of many other rivers occur in both; *Ῥῆσος* [t], *Ἑπτάπορος* [v], *Ῥόδιος* [v], *θεῖός τε*

[k] Theogonia, 557.
[l] Il. Θ. 48: Ψ. 148: Od. Θ. 363.
[m] Theogonia, 322.
[n] Z. 181, 182.
[o] Theogonia, 969.
[p] E. 125.
[q] Il. Π. 437. 514. 673 683: Υ. 385: Odyss. N. 322: Φ. 526: Τ. 271.
[r] 337–345.
[s] Il. M. 21.
[t] Theogonia, 340: Il. M. 21.
[v] Ibid. 341: ibid. 20.

Σκάμανδρος[x]: some of them so obscure, and probably so insignificant, though they had an actual existence[y], that it would be hard to say how Hesiod could have become acquainted even with their names, except through the Iliad of Homer.

ix. In the viith fragment of Hesiod, Polycaste, the youngest daughter of Nestor, is represented as the wife of Telemachus, and mother of Persepolis by him—

> Τηλεμάχῳ δ' ἄρ' ἔτικτεν ἐΰζωνος Πολυκάστη,
> Νέστορος ὁπλοτάτη κούρη Νηληϊάδαο,
> Περσέπολιν, μιχθεῖσα διὰ χρυσῆν Ἀφροδίτην.

And the genuineness of this fragment is attested by Eustathius, who quotes it in illustration of Od. Π. 117, 118[z]: where also Hesiod's account of the wives or children both of Ulysses and of Telemachus is compared with that of others. It is not impossible that such a marriage as this might have been a matter of fact, handed down by tradition to the time of Hesiod; but whether or not, it might evidently have been founded by a later poet on the description of the reception of Telemachus in the house of Nestor, and of the part borne by Polycaste in particular, in paying him the usual honours[a]: especially as the second line of the fragment is clearly the same with Od. Γ. 465, *κούρη* only being substituted for *θυγάτηρ*.

> Νέστορος ὁπλοτάτη θυγάτηρ Νηληϊάδαο.

x. The name of Καλυψὼ is enumerated along with those of the other Ὠκεανῖναι, or daughters of Oceanus[b]—

> Χρυσηΐς τ' Ἀσίη τε καὶ ἱμερόεσσα Καλυψώ.

And it is afterwards said[c]—

> Ναυσίθοον δ' Ὀδυσῆϊ Καλυψὼ δῖα θεάων
> γείνατο, Ναυσίνοόν τε, μιγεῖσ' ἐρατῇ φιλότητι.

There was no foundation in Homer for this statement. It must have been an inference drawn by Hesiod from the fact of Ulysses' seven years' residence in the island of Calypso; which he could have learnt only from the Odyssey: for as to

[x] Theog. 345: Il. M. 21.

[y] Cf. the Scholia on Iliad. M. 20: who tells us of the Ῥόδιος, ῥεῖ ἀπὸ Κλεανδρείας, ἀπεχούσης Πεύκης σταδίους ξ': and of the Ῥῆσος, ῥεῖ πρὸς ἄρκτον, ἀπὸ Καλῆς Πεύκης: 180 st. from Adramytteum: cf. also ad vers. 22.

[z] 1796. 33.

[a] Od. Γ. 464–469.

[b] Theog. 359.

[c] 1016. Cf. Eustath. loc. cit. 1796. 42.

any historical tradition of that kind, both Calypso and her island and Ulysses' sojourn there, we may take it for granted, were alike the invention of Homer. The names however here given to these supposed sons of hers by Ulysses are very observable. They are such as Homer himself assigned to his Phæacians [d]: and such as must have been purposely imagined for an insular people, who had to do only with ships and the sea. Nausithous in particular, according to him [e], was the name of their founder himself.

A similar remark may be made on Hesiod's account of the sons of Kirke by Ulysses also [f]; which is the more extraordinary, because he supposes her to have had two by him, though Homer himself does not make him stay with her even one full year: and also because neither even of these is called Telegonus, according to the tradition of later times, but one of them Agrius and the other Latinus.

xi. In the description of the waters of Styx, the phrase

Δεκάτη δ' ἐπὶ μοῖρα δέδασται [g]

resembles that of Homer [h]—

Τριτάτη δ' ἔτι μοῖρα λέλειπται.

And in the description of Tartarus [i]—

Ἐνθάδε γῆς δνοφερῆς καὶ Ταρτάρου ἠερόεντος
πόντου τ' ἀτρυγέτοιο καὶ οὐρανοῦ ἀστερόεντος
ἑξείης πάντων πηγαὶ καὶ πείρατ' ἔασιν,
ἀργαλέ' εὐρώεντα, τά τε στυγέουσι θεοί περ,
χάσμα μέγ—

The fourth line is Homer's [k],

Σμερδαλέ' εὐρώεντα, τά τε στυγέουσι θεοί περ—

and the change of *σμερδαλέα* into *ἀργαλέα* is observable, and one among other arguments that the line is no interpolation.

xii. In the account of the birth of the Muses, of Mnemosyne [l], two of the lines—

Ἀλλ' ὅτε δή ῥ' ἐνιαυτὸς ἔην, περὶ δ' ἔτραπον ὧραι,
μηνῶν φθινόντων, περὶ δ' ἤματα πόλλ' ἐτελέσθη—

are almost verbatim the same with two in the Odyssey [m],

Ἀλλ' ὅτε δή ῥ' ἐνιαυτὸς ἔην, περὶ δ' ἔτραπον ὧραι,
μηνῶν φθινόντων, περὶ δ' ἤματα μακρὰ τελέσθη.

[d] Odyss. Θ. 111 sqq.
[e] Z. 7: H. 62, 63.
[f] Theogon. 1011–1014. Cf. Lydus, De Mensibus, i. 13. p. 7. l. 3. Also, Eustathius, loc. cit.
[g] Theogonia, 789.
[h] Il. K. 253.
[i] Theogon. 736.
[k] Iliad, Υ. 65.
[l] Theogon. 58.
[m] K. 469.

And the second of these is found ῥητῶς in the Odyssey twice[n]. The only question in this case is whether they are to be considered an interpolation. The editors have not yet ventured to remove them from the text, nor even to enclose them in brackets. There are other phrases, in reference to the year, of standing occurrence in Homer, περιπλομένων, περιτελλομένων, ἐπιπλομένων ἐνιαυτῶν, and the like; and these also occur in Hesiod[o].

xiii. In the description of the shield of Hercules, the following six lines[p] are almost wholly taken from Homer's description of the shield of Achilles:

> Ἐν δὲ προίωξίς τε παλίωξίς τε τέτυκτο·
> ἐν δ' ὅμαδός τε φόβος τ' ἀνδροκτασίη τε δεδήει.
> ἐν δ' Ἔρις ἐν δὲ Κυδοιμὸς ἐθύνεον ἐν δ' ὀλοὴ Κὴρ,
> ἄλλον ζωὸν ἔχουσα νεούτατον, ἄλλον ἄουτον,
> ἄλλον τεθνειῶτα κατὰ μόθον ἕλκε ποδοῖϊν.
> εἶμα δ' ἔχ' ἀμφ' ὤμοισι δαφοίνεον αἵματι φωτῶν.

The word προΐωξις does not occur in Homer, but παλίωξις does[q]. The last four of these lines occur in terms in the description of the shield of Achilles[r]; only that in the first Hesiod has substituted ἐθύνεον for ὁμίλεον—which may perhaps be considered an improvement on the original:

> Ἐν δ' Ἔρις ἐν δὲ Κυδοιμὸς ὁμίλεον ἐν δ' ὀλοὴ Κὴρ,
> ἄλλον ζωὸν ἔχουσα νεούτατον, ἄλλον ἄουτον,
> ἄλλον τεθνειῶτα κατὰ μόθον ἕλκε ποδοῖϊν.
> εἶμα δ' ἔχ' ἀμφ' ὤμοιοι δαφοίνεον αἵματι φωτῶν.

xiv. This description of the shield of Hercules[s] indeed is so different in general from that of the shield of Achilles[t], that it does not admit of being compared with it throughout. It seems however to have been the opinion of the critics of antiquity, that the original of the former was ultimately the latter; and that Hesiod intended his description not only in imitation, but even in emulation, of that of Homer. Eustathius does not hesitate to say that the Aspis might have been conceived and executed by its author, as an epitome of the Iliad[v]: Δοκεῖ μὲν γὰρ ἐκείνη Ὁμηρικῷ πεποιῆσθαι ζήλῳ τῷ κατὰ

[n] T. 153: Ω. 142.
[o] Theogon. 184. 493: Aspis, 87.
[p] Aspis, 154.
[q] Il. M. 71: O. 69. 601. Cf. Phot. Lexicon, Παλίωξις.
[r] Il. Σ. 535.
[s] Aspis, 149–320.
[t] Il. Σ. 483–607.
[v] Ad Il. Σ. 474. 1154. 12: cf. ad Σ. 538. 1160. 46.

τὴν ὅλην Ἰλιάδα. The internal evidence of the poem itself gives some colour of probability even to such an opinion. It is certain at least that in this description Hesiod has exerted himself to the utmost, and put forth all his powers; as if spurred on by some unusual stimulus, like that of a desire to rival Homer: nor does his genius appear to such advantage any where in his extant remains as in this description, and in one or two passages of the Theogonia.

In one part of the description however, he has trodden so closely in the steps of Homer, both in the subjects selected for description, and in the order in which he has taken them, that, unless the coincidence could be resolved into a mere chance, we cannot but conclude that he must have had the shield of Achilles before his eyes. This is that which comes between v. 270 and v. 320, of the general description; embodying a series of representations which, with one or two slight exceptions, are exactly the same as those in Homer: so that in this part of the shield of Hercules we have in effect an epitome of the shield of Achilles.

The first of these representations is a marriage scene [x], as it is in Homer; and a marriage celebrated by night, with the light of torches, and to the sound of music, just as it is in Homer. The circumstances and concomitants of both pictures are the same, and in some instances even the words.

If we may pass over a cursory allusion to the racing of horses, which comes in next [y], the second scene is a representation of the process of ploughing [z]: as it also is in Homer. The third subject is a reaping scene [a]; and that is the third in Homer also. The fourth in Hesiod is a description of the vintage [b], and of the act or process of treading out the wine from the grapes: and that is the subject of the fourth representation on the shield of Achilles. And though after this, there is nothing in the description of the shield of Hercules which would correspond to the fifth scene in that of the shield of Achilles (that of cattle in the act of being driven out to water, and attacked by lions), or to the subject of the sixth, which is simply a representation of cattle made up for the winter in their cotes and stalls—yet

[x] Aspis, 270—285. [y] 285, 286. [z] 286–288. [a] 288–291. [b] 292–301.

as Homer's description in general concludes with a dance, (that is, an occasion of festivity of some kind,) so does that of Hesiod with games [c], and hare hunting [d], and horse raceings [e]—all instances of festivity too, and of employments proper only for one season of the year, viz. the winter, or the end of the year; at which the description of the shield of Achilles, as we hope to see hereafter, is also brought to a close. In these circumstances of difference, there is no more disagreement between the copy and the original than might purposely have been introduced, for the sake of variation or embellishment, or might easily be accounted for by the change of manners and customs, between the time of Homer and that of Hesiod; while the points of resemblance are too numerous and too close, to be resolvable into accidental coincidences: particularly, if we look at the context of the description in Hesiod in general—just before this portion of it in particular. There is nothing in common between this part of the whole and the preceding. It is as isolated and independent of the context as if it had been an after-thought—*a pannus purpureus assutus ab extra*—an addition, made after the rest had been completed, and introduced here, as the only place which the poet could find for it.

xv. Ἀλλὰ τίη μοι ταῦτα περὶ δρῦν ἢ περὶ πέτρην [f];

Compare the following from Homer—

Ἀλλὰ τίη μοι ταῦτα φίλος διελέξατο θυμός [g];

Οὐ μέν πως νῦν ἐστὶν ἀπὸ δρυὸς οὐδ' ἀπὸ πέτρης
τῷ ὀαριζέμεναι [h].

Οἱ γὰρ ἀπὸ δρυός ἐσσι παλαιφάτου οὐδ' ἀπὸ πέτρης [i].

It must appear exceedingly probable that Hesiod borrowed the peculiar phraseology of his line from one or other of these in Homer. It is no objection that both the language and the sentiment are proper only for a proverb. They are proverbial in Homer too: and Homer himself was probably the first person who used this proverbial mode of speaking.

xvi. Πὰρ δ' ἴθι χάλκειον θῶκον καὶ ἐπαλέα λέσχην
ὥρῃ χειμερίῃ [k].

c 301, 302.
d 302–304.
e 305–320.
f Theogon. 35.
g Il. Φ. 562: cf. X. 122.
h X. 126.
i Od. T. 163.
k Opera et Dies, 491: cf. 499. ἥμενον ἐν λέσχῃ.

This allusion was probably suggested by the speech of Melantho to Ulysses in the Odyssey[l].

> *Οὐδ' ἐθέλεις εὕδειν χαλκήϊον ἐς δόμον ἐλθὼν,*
> *ἠέ που ἐς λέσχην*[m].

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xvii. *Αἰδὼς δ' οὐκ ἀγαθὴ κεχρημένον ἄνδρα κομίζει,*
αἰδὼς ἥτ' ἄνδρας μέγα σίνεται, ἠδ' ὀνίνησι·
αἰδώς τοι πρὸς ἀνολβίην θάρσος δὲ πρὸς ὄλβον[n].

The first of these lines occurs in Homer[o];

> *Αἰδὼς οὐκ ἀγαθὴ κεχρημένῳ ἀνδρὶ προΐκτῃ—*

or, as it is quoted, and compared with Hesiod's[p]—

> *Αἰδὼς δ' οὐκ ἀγαθὴ κεχρημένῳ ἀνδρὶ παρεῖναι.*

The second also is found in Homer[q].

> *Οὐδέ οἱ αἰδὼς*
> *γίγνεται, ἥτ' ἄνδρας μέγα σίνεται, ἠδ' ὀνίνησι.*

The first two of these lines are some of those which the editors of Hesiod consider of questionable genuineness. Plutarch too, as we are told by Proclus, *in loc*, regarded these as an interpolation from Homer: which was by no means a necessary inference from the fact that some lines like them were found in the text of the Iliad or of the Odyssey—unless Hesiod was older than Homer. The Scholiast on the Iliad[q] tells us (with just as little reason *a priori*,) that the genuineness of that line where it stood in the Iliad was suspected, because the same sentiment occurred in Hesiod: as he does in another instance, that four lines in the Iliad[r] were considered spurious, because they had more of the character of the diction of Hesiod, than of that of Homer. There are no sufficient critical grounds for ejecting these lines from the text of Hesiod; and it is certain they cannot well be spared from the context: and this repetition of the word *αἰδὼς* at the beginning of each, is parallel to that of *ἠὼς*[s] in another instance, in which the genuineness of the text has never been disputed; and consequently must be considered one of his idioms. And both the sentiment and the expres-

l Σ. 327.

m Cf. supra, pag. 66, what was collected in illustration of the λέσχαι of antiquity.

n Opera et Dies, 315.

o Od. P. 347: cf. 352.

p By the Scholia, in loc.

q Il. Ω. 44.

r Ω. 614—617.

s Opera et Dies, 576–579.

sion in the first line are german to those in another, which occurs soon after[t].

Ἐλπὶς δ' οὐκ ἀγαθὴ κεχρημένον ἄνδρα κομίζει.

To these examples of coincidences between the sentiments and language of Hesiod and those of Homer, more might be added*; but these are sufficient for our purpose at present,

* For example, the reader may compare the following.

i. *Ἴδμεν ψεύδεα πολλὰ λέγειν ἐτύμοισιν ὅμοια.*

Theogon. 27.

Ἴσκεν, ψεύδεα πολλὰ λέγων ἐτύμοισιν ὅμοια.

Odyssey, T. 203.

ii. *Ἀθάνατοί τε θεοὶ χαμαὶ ἐρχόμενοί τ' ἄνθρωποι.*

Theogon. 272.

Ἀθανάτων τε θεῶν χαμαὶ ἐρχομένων τ' ἀνθρώπων.

Iliad, E 442.

iii. *Αἵ μέν τε πρόπαν ἦμαρ ἐς ἠέλιον καταδύντα.*

Theogon. 596.

Ὣς τότε μὲν πρόπαν ἦμαρ ἐς ἠέλιον καταδύντα.

Il. A. 601 : cf. T. 162 : Ω. 713 : Od. I. 161, 556 : K. 183, 476, M. 29 : T. 424.

iv. *Ἰφθίμου τ' Ἀΐδεω καὶ ἐπαινῆς Περσεφονείης.*

Theogon. 768.

Ἰφθίμῳ τ' Ἀΐδῃ καὶ ἐπαινῇ Περσεφονείῃ.

Od. K. 534 : Λ. 47 : cf. K. 491, 564.

v. *Ναίει ἀπήμαντος καὶ ἀγήραος ἤματα πάντα.*

Theogon. 955.

Εἴην ἀθάνατος καὶ ἀγήραος ἤματα πάντα.

Il. Θ. 539 : cf. Od. E. 136 : H. 257 : Ψ. 336.

vi. *Βοιωτοὶ πλήξιπποι, κ', τ. λ.*

Aspis, 24.

An Homeric epithet; Cf. Il. B. 104 : Δ. 327 : E. 705 : Λ. 93.

vii. *Ἀνδράσι τ' ἀλφηστῇσιν ἀρῆς ἀλκτῆρα φυτεύσῃ.*

Aspis, 29 : cf. 128.

Ἔφθιτ', ἐμεῖο δὲ δῆσεν ἀρῆς ἀλκτῆρα γενέσθαι.

Il. Σ. 100.

[t] v. 498.

viii. *Θησέα τ' Αἰγείδην ἐπιείκελον ἀθανάτοισι.*

Aspis, 182.

Θησέα τ' Αἰγείδην ἐπιείκελον ἀθανάτοισιν.

Iliad, A. 265.

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ix. *Ὄσσε δέ οἱ πυρὶ λαμπετόωντι ἐΐκτην.*

Aspis, 390.

Ὄσσε δέ οἱ πυρὶ λαμπετόωντι ἐΐκτην.

Iliad, A. 104.

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x. *Δοιοὶ γάρ τε πίθοι κατακείαται ἐν Διὸς οὔδει*
δώρων οἷα δίδωσι, κακῶν, ἕτερος δὲ ἑάων.

Il. Ω. 527.

Ἡ διπλῆ, ὅτι ἐντεῦθεν Ἡσιόδῳ τὸ περὶ τοῦ πίθου μύθευμα; that is, in his story relating to Pandora, Opera et Dies, 83–98.

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xi. *Ἥτ' ἄνδρα καὶ ἴφθιμόν περ ἐόντα*
εὕει ἄτερ δαλοῦ, καὶ ὠμῷ γήραϊ δῶκεν.

Opera et Dies, 703.

ἥ ἑ μάλιστα
ἤκαχ' ἀποφθιμένη, καὶ ἐν ὠμῷ γήραϊ θῆκεν.

Od. O. 355.

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xii. *Πάντοθεν, ὄφρ' ἴσχωσ' ἀνέμων μένος ὑγρὸν ἀέντων.*

Opera et Dies, 623.

Τοὺς μὲν ἄρ' οὔτ' ἀνέμων διάει μένος ὑγρὸν ἀέντων.

Od. E. 478. cf. T. 440.

Ἐξ οὗ ἔλαβε τὸν στίχον Ἡσίοδος.

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xiii. *Μηδέ ποτ' οὐλομένην πενίην θυμοφθόρον ἀνδρὶ*
τέτλαθ' ὀνειδίζειν.

Opera et Dies, 715.

Μῆνιν ἄειδε θεὰ Πηληϊάδεω Ἀχιλῆος
οὐλομένην.

Il. A. 1.

Etym. M. Οὐλομένην. . ἀλλὰ καὶ Ἡσίοδος ἔλαβε τὴν χρῆσιν, οὐλομένην πενίην εἰπών.

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xiv. *Τοῖς δὲ δίχ' ἀνθρώπων βίοτον καὶ ἤθε' ὀπάσσας*
Ζεὺς Κρονίδης κατένασσε πατὴρ ἐς πείρατα γαίης.
καὶ τοὶ μὲν ναίουσιν ἀκηδέα θυμὸν ἔχοντες
ἐν μακάρων νήσοισι παρ' Ὠκεανὸν βαθυδίνην,
ὄλβιοι ἥρωες· κ', τ. λ.

Opera et Dies, 166–170.

Ἀλλά σ' ἐς Ἠλύσιον πεδίον καὶ πείρατα γαίης
ἀθάνατοι πέμψουσιν, κ', τ. λ.

Od. Δ. 563–568.

and competent, in our opinion, to prove that Hesiod must have been acquainted with the poems of Homer. If so, those testimonies which would make him older than Homer, (as that of the Parian Chronicle, that of Philochorus, and others) must be set aside: unless any one should think of inverting our reasoning, and inferring from these coincidences that Homer borrowed from Hesiod, and not Hesiod from Homer. We are ready to admit that some of the preceding examples, *per se*, may not be considered conclusive, or that some of them may be objected to as founded on doubtful texts; but they cannot all be excepted to, on any such grounds: and taken collectively, the weaker examples will be justified by the analogy of the stronger. It should be remembered that a single instance of undoubted imitation of one author by another, a single quotation from him, or allusion to him, is sufficient to determine which must have been the older of the two. It is not however enough to have proved, or rendered it in the highest degree probable, that Hesiod must

Hesiod's idea of the Μακάρων νῆσοι must have been derived from this passage of the Odyssey.

The ancients too have remarked that Hesiod differed from Homer, sometimes in reference to a point of the national faith, sometimes to one on the received mythology, sometimes on a question of history and matter of fact. Hesiod, for instance, made Hephæstus or Vulcan the son of Hera only—Theogon. 927–929: Homer of Jupiter and Hera: cf. the Schol. ad Apoll. Rhod. i. 859: and on the Theogonia *loco citato.* Hesiod made the children of Niobe ten sons and ten daughters, Homer six sons and six daughters; Apollod. Bibl. iii. v. 6: cf. A. Gell. xx. 7. Hesiod's account of the death of Periclymenus, one of the sons of Neleus, was different from that of Homer; Schol. ad Apollod. Rhod. i. 156: Steph. Byz. Γερηνία, Fragm. xxii. Homer is express that Menelaus had no child by Helen but one, Hermione; Hesiod that he had also a son by her, whom he called Nicostratus; Schol. ad Soph. Electram. 539: Eustathius ad Il. Γ. 175. 400. 30. Homer, throughout the Iliad, implies that Agamemnon was the son of Atreus; Hesiod made him the son of Pleisthenes and the grandson of Atreus: Eust. ad Il. A. 8. 21. 12. And this is perhaps the most important of all the points of difference between them; and in this Hesiod appears to have been in the right. The necessity of the case at least requires one generation more between Pelops and Agamemnon, than there could have been, if Agamemnon was the son, and not the grandson, of Atreus. In all these instances, Hesiod must have differed knowingly from Homer; and therefore these also come in, to strengthen the general argument, that he must have been later than Homer.

have been later than Homer; it is necessary that we should shew, if possible how much later he must have been: and if that too can be effected by the same kind of proof (his own testimony concerning himself,) the result in this instance also, will be so much the more satisfactory.

Section IV.—*Testimonies of the Hesiodic writings, from which it may be inferred how much later they were than those of Homer.*

i. The Scholiast on the Iliad [x] has taken occasion to observe that the word Πελοπόννησος, as the name of an integral part of the surface of Greece, was unknown to Homer, but known to Hesiod; *Σημειοῦνταί τινες ὅτι τὴν ὅλην Πελοπόννησον οὐκ οἶδεν ὁ ποιητὴς, Ἡσίοδος δέ.* It is certain that this word occurs no where in Homer: and it must also be admitted that it is not found at present in the remains of Hesiod, not even in his fragments. But these are so small a part of the works ascribed to him, that this ought to be no objection; and it may still be believed on the authority of the Scholiast upon the Iliad, that in some or other of his poems, the word did occur in its proper geographical sense, the same as in the classical writers of later times. The question is then when this name was first introduced, and after what time may it be supposed to have come into general use? for if Hesiod used it in its proper geographical meaning, he could not have been writing until after that time at least. But whether this question can be determined or not at present; still, while the fact is true that the name of the Peloponnese was unknown to Homer, and known to Hesiod—the inference from that distinction will hold good also—that Hesiod must have been later, and probably not a little later, than Homer.

ii. It is observed in the Scholia on Hesiod [y] that the word *νόμος* in the sense of law was unknown to Homer; but it occurs both there, and elsewhere [z], in that sense in Hesiod. Josephus makes the same remark [a]; Hesychius too observes on Νόμος: *Ὁ ποιητὴς τῶν (τὸν) καθ' ἡμᾶς (νόμων) (νόμον) οὐκ οἶδεν.* Lydus makes a similar observation on the use of the

[x] I. 246.
[y] Ad Opera, 274.
[z] Cf. Theogon. 66 417.
[a] Contra Apion. ii. 15.

word *τύχη* [b]: *Ὅτι οὐδαμοῦ τοῦ τῆς τύχης ὀνόματος Ὅμηρος μέμνηται, Ἡσίοδος μέντοι.* Nor does this word occur in any sense in Homer; but it occurs in the Theogonia of Hesiod [c], as the proper name of one of the daughters of Oceanus. It is well known that the *prosody* even of the same word is not always the same in Hesiod as in Homer; that *καλὸς* for instance in Homer has the penult always long, in Hesiod always short: *ὀπωρινὸς* in the former has the penult always long, in the latter with one exception [cc], always short. *Μετοπωρινὸς* too in Hesiod is short, though that word does not occur in Homer.

iii. Thucydides long since observed [d] that the word *Ἕλλην* (and we may add that of *Ἑλλὰς* also), in Homer, had always a limited signification, for a part of Thessaly, and the inhabitants of that part. But *Ἑλλὰς* occurs in Hesiod [e] for Greece in the complex *. *Πανέλληνες* occurs also [f] in the same comprehensive sense, for all the Greeks without distinction.

* [1] *Καὶ Ἕλληνας οὐδέποτε εἴρηκεν, ἀλλ' Ἀργείους ἢ Δαναούς· καὶ οὐδὲ Ἑλλάδα τὴν οὐκουμένην ὑπὸ Ἑλλήνων, ἀλλὰ μίαν πόλιν Θεσσαλίας, ἧς τοὺς οἰκήτορας Ἕλληνας λέγει* [2]. Dikæarchus, Βίος Ἑλλάδος [3],

> *Ἡ δ' Ἑλλὰς ἀπὸ τῆς Ἀμβρακίας εἶναι δοκεῖ*
> *μάλιστα συνεχὴς τὸ πέρας· αὐτὴ δ' ἔρχεται*
> *ἐπὶ τὸν ποταμὸν Πηνειὸν, ὡς Φιλέας γράφει,*
> *ὄρος τε Μαγνήτων Ὁμόλην κεκλημένον.*

The word *Πανέλληνες* seems to have been used in the comprehensive sense of all the Greeks, before *Ἕλληνες* was so. In this sense, at least, it occurs in Archilochus [4], *Ὡς Πανελλήνων ὀϊζὺς ἐς Θάσον* [5] *συνέδραμεν*: though

[b] De Mensibus, iii. 18. p. 41. Pausanias, iv. xxx. 3. has a statement which at first sight appears to be flatly contradictory to this assertion of Lydus': *Πρῶτος δὲ ὧν οἶδα ἐποιήσατο ἐν τοῖς ἔπεσιν Ὅμηρος Τύχης μνήμην*—but he proceeds to explain it in such a manner as shews it to be perfectly compatible with that of Lydus: *Ἐποιήσατο δὲ ἐν ὕμνῳ τῷ ἐς τὴν Δήμητρα, ἄλλας τε τῶν Ὠκεανοῦ θυγατέρας καταριθμούμενος ὡς ὁμοῦ Κόρῃ τῇ Δήμητρος παίζοιεν. . . . καὶ οὕτως ἔχει τὰ ἔπη·*

> *Ἡμεῖς μὲν μάλα πᾶσαι ἀν' ἱμερτὸν λειμῶνα,*
> *Λευκίππη Φαινώ τε καὶ Ἠλέκτρη καὶ Ἰάνθη*
> *Μηλόβοσίς τε Τύχη τε καὶ Ὠκυρόη καλυκῶπις.*

That is, it occurred in an Hymn to Demeter, ascribed to Homer — the genuineness of which may very well be doubted; and yet the above names, all but one, occur in the Theogonia, loc. cit. among the names of the *Ὠκεανῖναι* too.

[c] v. 360,

> *Εὐδώρη τε Τύχη τε καὶ Ἀμφιρὼ Ὠκυρόη τε.*

[cc] Opera et Dies, 675.

[d] i. 3.

[e] Opera et Dies, 651.

[f] Ibid. 526.

[1] Scholia ad Iliad, B. 529, 530.

[2] Cf. ad B. 684, and Π. 595. Also Strabo, ix. 5. 297. 6.

[3] P. 5. l. 31. Geogr. Min. ii.

[4] Fragm. xxi.

[5] Cf. lxxi.

iv. Homer has more than once mentioned the Χάριτες or Graces; but he has no where specified their number, nor told us their names, nor given us distinctly to understand that one of them was the wife of Hephæstus or Vulcan—though he may imply this, in his account of the visit of Thetis in the Iliad [g]. Hesiod supplies these omissions [h], making the Graces three in number; calling them Aglaïe, Euphrosyne, and Thalia respectively, and giving the youngest of them, Aglaïe, in marriage to Hephæstus *.

Πανέλληνες itself occurs in Homer [6]; but there only in the sense of the followers of Ajax Oïleus, collectively. Archilochus was older than Hesiod; in whom also the form of the word in this comprehensive sense is Πανέλληνες, not Ἕλληνες [7]. Ἑλλὰς in the sense of Greece in general occurs in Theognis as well as Hesiod [8]:

> *Κύρνε, καθ' Ἑλλάδα γῆν στρωφώμενος—*

and it may be inferred from his own testimony concerning himself that he could not have been older than Hesiod [9].

The national designation of Σκύθαι, according to Strabo [10], was found in some of the poems of Hesiod, but it did not occur any where in Homer; though Homer also has described the same people, and by similar epithets, of Ἱππημολγοὶ κ', τ. λ. [11]; and Lydus [12] has quoted three lines of Hesiod, from which it would appear that he must have been acquainted with the name of Γραικοὶ—which in Latin superseded that of Ἕλληνες:

> *Κούρη δ' ἐν μεγάροισιν ἀγαυοῦ Δευκαλίωνος*
> *Πανδώρη Διὶ πατρὶ, θεῶν σημάντορι πάντων,*
> *μιχθεῖσ' ἐν φιλότητι τέκε Γραικὸν μενεχάρμην.*

Hesychius, Γραικός· Ἕλλην—Γραικιστί· Ἑλληνιστί. The name appears to have been actually borne by an obscure clan of the Greeks, settled in Epirus [13].

* Pausanias, remarking on this difference of statements about the Graces in Homer and Hesiod respectively (ix. xxxv. 1.), tells us the same

g Il. Σ. 382.

Τὴν δὲ ἴδε προμολοῦσα Χάρις λιπαροκρήδεμνος.

In the song of Demodocus in the Odyssey, Aphrodite is the recognised wife of Hephæstus; but after the proof of her unfaithfulness there recorded, we are at liberty to suppose he might have repudiated her and married Χάρις.

h Theogn. 907–911: 945, 946.

6 Il. B. 530.

7 Opera et Dies, 526.

8 247.

9 Cf. 603. 1099: 22–24: 467. 667: in which he addresses Simonides the poet: and 760–766. 771–786, in which he alludes to the Median or Persian invasion of Greece.

10 vii.

11 Il. N. 5.

12 De Mensibus, i. 13. p. 7.

13 Cf. Aristot. Meteorologica, i. 14. pag. 32. 5: Apollod. i. vii. 3: Parian Chron. Epocha vi.: Pliny, H. N. iv. 14. And no doubt Hesiod in this fragment, if it is a genuine one, meant their founder in particular.

In like manner, Homer has no where authenticated the genealogy of the Muses, as the daughters of Jupiter and Mnemosyne; though he has mentioned their number, in his description of the funeral rites of Achilles [i]. Hesiod has given a particular account of their parentage [k]; besides a more general one [l], the genuineness of which will perhaps not be disputed, whatsoever exceptions may be taken to the other.

v. From the office which Homer assigned to Hebe (that of cupbearer at the banquets of the Gods in Olympus), the commentators of antiquity argued that he must have considered her a virgin: such offices, in his time, or in his apprehension, being incompatible with the relations of marriage, whether in males or in females. Some of them consequently suspected the genuineness of that part of the Odyssey [m], in which the real and substantial Hercules was represented as living in Olympus, and married to Hebe, while his unreal counterpart, the shadowy Hercules, was reigning among the ghosts in Hades. Hesiod makes Hebe the consort of Hercules from the first; as does Pindar [n], and the rest of the poets later than Hesiod.

> *Ἥβην δ' Ἀλκμήνης καλλισφύρου ἄλκιμος υἱὸς*
> *ἶς Ἡρακλῆος, τελέσας στονόεντας ἀέθλους,*
> *παῖδα Διὸς μεγάλοιο καὶ Ἥρης χρυσοπεδίλου,*
> *αἰδοίην θέτ' ἄκοιτιν ἐν Οὐλύμπῳ νιφόεντι* [o].

Such are some of the examples which may be adduced, tending to show that, between the time of Homer and that of Hesiod, the language, the geography, and the mythology

account as this in Hesiod was given of them in the verses ascribed to Onomacritus. Onomacritus was a contemporary of the Pisistratidæ; B. C. 527–510, according to Mr. Clinton—and might have been acquainted with the writings of Hesiod, particularly the *Θεογονία*—though Hesiod himself might have flourished and written only in the first half of the same century. Seneca, Opp. iv. 13: De Beneficiis, i. iii. § 6, after reciting the names of the Graces from Hesiod, continues, § 7: Itaque Homerus uni mutavit. Pasithean adpellavit . . . § 10. Ecce Thalia, de qua quum maxime agitur, apud Hesiodum Charis est, apud Homerum Musa. Cf. Hesychius, *Αἴγλης χάριτες*. Etym. M. *Εὐρυνόμη*.

i Od. Ω. 60.
k Theogonia, 50–63.
l 915–917.
m Λ. 600–603.
n Nemea, i. 109: Isthm. iv. 102.
o Theogonia, 950.

of Greece must have undergone changes which could have been the work of time only. As to the change in the language; the difference of the style and idioms of Hesiod from those of Homer in general has been adverted to[p]. With respect to the changes in the popular mythology; the Theogonia alone, as a regular and systematic compendium both of the cosmogony and of the theology of the Greeks, is competent evidence of that fact. For this system of Hesiod's is the system of that kind which ever after constituted the national creed of the Greeks, and to which little or nothing was added. Hesiod seems to have fixed the belief of his countrymen—not only the common people, but the poets, the philosophers, and the learned among them; all of whom were content both to think and write and reason about these things, just as Hesiod had taught them: though whether even Hesiod invented this system, or merely reduced to order traditions, which had been handed down to his time from an earlier antiquity, is another question. But to proceed with our summary of the intimations derivable from the testimony of his own writings—which enable us to judge of his age in comparison of that of Homer.

vi. The scholiasts on the Iliad[q] argue that Hesiod must have been younger than Homer; because in the time of Homer (as that passage proved[r]), candidates in the games contended with a girdle about their loins; in that of Hesiod they contended naked. No instance, it is true, of any contest between naked candidates occurs in the remains of Hesiod; not even (so far as we know) in his fragments: but that ought to be no objection at present, if the scholiasts of antiquity had read of such cases in his poems. And they refer to one of the kind in particular; the contest of Hippomenes and Atalanta in the foot race, in which Hippomenes was represented as having run naked: and this would be so much the more remarkable, because, as it was a contest between a man and a woman (i. e. something unusual of its kind), whatsoever might have been the rule with re-

p Pag. 201.

q Ψ. 683. The contest of Epeus and Euryalus at the funeral games of Patroclus.

r Cf. also v. 710, the wrestling match between Ulysses and Ajax; and Od. Σ. 66, the contest between Ulysses and Irus.

spect to such contests between men, it was to be expected *a priori* that in this instance it would have been dispensed with. Quintus Smyrnæus introduces combatants in the athletic exercises (wrestling and racing) at the funeral games of Achilles; but because these contests were taking place in the presence of Thetis and the Nereids, acting as umpires in them, he supposes his heroes to have girded themselves, before they entered the lists, in order that no offence might be given to the modesty of such spectators [s]: Why then, it may be asked, did Hesiod represent his Hippomenes, contending in the race with his Atalanta, and contending naked? And what reason could there be for it, except the simple matter of fact, that the rule, which made it incumbent on the candidates in the games to contend naked, had been so long established and so long observed in his time, that no idea of impropriety was any longer attached to it under *any* circumstances; or rather, that to have supposed the case otherwise in a particular instance, would have appeared to offend against historical truth and propriety.

It is worthy of remark, as a curious coincidence in illustration of what Hesiod himself might have thought of the propriety or impropriety of his own representation in this respect; that Plato, who also would have had women contend in these games as well as men, and naked too as well as men—argues in behalf of such a custom, that the rule being once introduced, time and practice would soon reconcile people to it, in the case of women, as they had done in the case of men [t]: *Καὶ ὑπομνήσασιν ὅτι οὐ πολὺς χρόνος ἐξ οὗ τοῖς Ἕλλησιν ἐδόκει αἰσχρὰ εἶναι καὶ γέλοια ἅπερ νῦν τοῖς πολλοῖς τῶν βαρβάρων γυμνοὺς ἄνδρας ὁρᾶσθαι.* These contests of naked candidates (*γυμνοὶ* in Greek) gave name to the Palæstra, the place of training or contending in Greek, *Γυμνάσιον*, and to the art of training, the *Γυμναστικὴ*, and in aftertimes to such games themselves, the *Γυμνὰς*, as in Statius [v],

Hic tibi festa
Gymnas, et insontes juvenum sine cæstibus iræ,
Annua veloci peragunt certamina lustro.

This rule too was no doubt the reason why women were

[s] iv. 186–192.
[t] Opp. pars iii. tom. i. 221. 11. De Republica, v.
[v] Silvæ, iii. i. 43. Cf. ii. ii. 8.

excluded from such games; from the Olympic games at least: an exclusion so invariably enforced as to have been relaxed only once—in favour of the daughter of Diagoras of Rhodes[x], a renowned athlete in his own time, and the father of a family of victors.

With regard then to the old rule in this respect—(the use of the διάζωμα on all such occasions in contradistinction to its disuse—) the testimony of Plato just referred to would imply that its discontinuance even among the Greeks could have been of no long standing in his time. Thucydides plainly affirms that fact[a]; premising that the Lacedæmonians were the first to lay it aside: implying probably that they had done so in the public training and exercising of their own youth according to the institutions of Lycurgus, before it was done in the national games: Ἐγυμνώθησάν τε πρῶτοι, καὶ ἐς τὸ φανερὸν ἀποδύντες λίπα μετὰ τοῦ γυμνάζεσθαι ἠλείψαντο· τὸ δὲ πάλαι καὶ ἐν τῷ Ὀλυμπιακῷ ἀγῶνι διαζώματα ἔχοντες περὶ τὰ αἰδοῖα οἱ ἀθληταὶ ἠγωνίζοντο, καὶ οὐ πολλὰ ἔτη ἐπειδὴ πέπαυται. ἔτι δὲ καὶ ἐν τοῖς βαρβάροις ἔστιν οἷς νῦν, καὶ μάλιστα τοῖς Ἀσιανοῖς, πυγμῆς καὶ πάλης ἆθλα τίθεται, καὶ διεζωσμένοι τοῦτο δρῶσιν.

The Scholiast on this passage supplies, though not the date of the Olympiad, when this change was made, yet the name of the victor in the stade who first ran naked in the race; viz. Orsippus of Megara: Ἀπὸ Ὀρσίππου Μεγαρέως ἐγυμνώθησαν ἐν τοῖς ἄγωσιν, ὡς δηλοῖ καὶ τὸ εἰς αὐτὸν ἐπίγραμμα·

Ὀρσίππῳ Μεγαρεῖς μεγαλόφρονι τῇδ' ἀρίδηλον
μνῆμα θέσαν φάμᾳ Δελφίδι πειθόμενοι.
πρῶτος δ' Ἑλλήνων ἐν Ὀλυμπίᾳ ἐστεφανώθη
γυμνὸς, ζωννυμένων τῶν πρὶν ἐπὶ σταδίῳ[b].

[x] Cf. Pausanias, v. vi. 5: vi. vii. 1: who tells us the name of this daughter was Callipateira. So also the Scholiast on Pindar, Ol. vii. Arg. Tzetzes, Chilias i. 592–618. Histor. 23. calls her Ἀριστοπάτειρα: cf. Chil. iv. 486: xii. 359. Histor. 407. Both these names may be considered fictitious; and Pausanias, loc. cit says that according to others she was also called Pheretime, and Val. Max. viii. xv. 4. Externa calls her Pherenike. Statius, Silvæ, iii. 1. 140, describing the games of Hercules Surrentinus, supposes the sea-nymphs to steal a peep at them.

Nec pudet occulte nudas spectare
palæstras.

[a] i. 6. Cf. Dionys. Hal. vii. 72: Herod. i. 10. Clemens Alex. Pædagogus, iii. v. 33. 301. l. 24: Καὶ οἱ μὲν παλαιοὶ τῶν ἀθλητῶν γυμνὸν δεικνύναι τὸν ἄνδρα αἰδούμενοι, ἐν διαζώμασι τὴν ἀγωνίαν ἐκτελοῦντες τὸ αἰδῆμον ἐφύλαττον. Philostratus, Vita Apollon. vi. v. 269. B. would imply that the practice of contending naked at the Olympic games was as old as Hercules, and instituted by him: cf. viii. vii. 419. But Philostratus' authority is worth little.

[b] Cf. the Corpus Inscript. Græc. 1050. Megaricæ—where the actual inscription on his Μνῆμα, still in existence, is given.

He was buried in the agora at Megara, as we learn from Pausanias[bb], who also mentions this circumstance of his history: Ὃς περιεζωσμένων ἐν τοῖς ἄγωσι κατὰ δὴ παλαιὸν ἔθος τῶν ἀθλητῶν, Ὀλύμπια ἐνίκα στάδιον δραμὼν γυμνός.

Now this Orsippus appears in the Olympic ἀναγραφαὶ[c], Ol. xv. B. C. 720: and this is confirmed by Hesychius, who dates the disuse of the zone with that Olympiad: Ζώσατο· τὴν ζώνην περὶ τὴν ὀσφὺν ἔσφιγξε· κατὰ γὰρ τοὺς Ὁμήρου χρόνους οὐδέπω γυμνοὶ ἠγωνίζοντο, ἀλλ' ἀπὸ τῆς πεντεκαιδεκάτης Ὀλυμπιάδος. Dionysius of Halicarnassus recognises it as the date of the disuse; though he supposes the name of the first victor, who ran naked, to have been Acanthus, not Orsippus[d]: the explanation of which is, that Orsippus was the victor in the stade, Acanthus in the δόλιχος, or long race[c], on this same occasion. The Scholia on the Iliad[e] call this first victor Ersippus, or Orippus, and according to one reading of the text date the Olympiad, Ol. 14, according to another, Ol. 32; and in the archonship of Hippomenes at Athens, which Mr. Clinton, after Eusebius, dates B. C. 722. The Etym. M. also dates Orsippus Ol. xxxii: Γυμνασία· ἔθος ἦν τοῖς παλαιοῖς περιζώματα φορεῖν ἐν τοῖς αἰδοίοις, καὶ οὕτως ἀγωνίζεσθαι. κατὰ δὲ τὴν τριακοστὴν δευτέραν Ὀλυμπιάδα Ὀρσίππου τοῦ Λακεδαιμονίου ἀγωνιζομένου, λυθὲν τὸ περίζωμα αἴτιον αὐτῷ νίκης ἐγένετο· ἐξ οὗ καὶ νόμος ἐτέθη γυμνοὺς τρέχειν. Eustathius[f]: Περὶ δὲ τοῦ ζώματος φέρεται ἱστορία, ὅτι μετὰ τὴν ιδ' Ὀλυμπιάδα συνέβη Ὄρσιππόν τινα ἐμποδισθέντα ὑπὸ τοῦ περιζώματος πεσεῖν καὶ τελευτῆσαι, ἢ κατά τινας νικηθῆναι· ὅθεν ἐθεσπίσθη γυμνοὺς τοὺς τοιούτους ἀγωνίζεσθαι. ἀφ' οὗ καὶ γυμνάσιον ὁ τόπος οὗ τοὺς ἀγῶνας ἐποιοῦντο. ὥστε, φασὶ, νεώτερος Ὁμήρου Ἡσίοδος, γυμνὸν εἰσάγων Ἱππομένην ἀγωνιζόμενον τῇ Ἀταλάντῃ.

If Orsippus then was the first candidate who obtained the prize in the Olympic stadium, without the girdle, the date of its disuse could not have been earlier than B. C. 720. Homer was 200 years older. The question is, How much later than the same time Hesiod must have been? in whose days not only the διάζωμα, but even the remembrance of it, seems to have become obsolete: and that could scarcely have hap-

bb i. xliv. 1.

c Cf. Euseb. Chron. Arm. Lat. Pars i. 284. Anecdota Græca Paris. ii. 142. 19.

d vii. 72.

e Supra.

f Ad Il. Ψ. 683. 1324. 15.

pened in less time than an hundred years. But let us suppose he was no older than Orsippus himself, B. C. 720—even that will be a prodigious descent from the age of Homer, and will justify us in setting aside all those testimonies which would make him less than 200 years younger.

vii. We had occasion to observe in the first part of these Fasti and Origines[g], that many things, currently believed among the Greeks in later times, with reference to the domestic history of the family of Pelops, and to the circumstances of the Trojan war, were unknown to Homer. Of this number was the fable relating to the detention at Aulis, through the μῆνις of Artemis,—and to the sacrifice of Iphigenia, supposed to have been produced by it. And though it may be difficult to fix the first date of these different fictions, or the order in which they were invented, or the authors who gave them currency, we may safely pronounce upon them all, that they were later than the age of Homer, and probably a good deal later too. We collect indeed, from the testimony of Æschylus, the oldest of the Greek tragedians, that the domestic quarrel of the house of Thyestes and of that of Atreus, the banquet of Thyestes, the resentment of the goddess, the detention at Aulis, the sacrifice of Iphigenia, (every thing in short of this kind, except the going back of the sun, as a consequence of the banquet,) had been received upon the stage by his time, and made part of the traditionary history of the Pelopidæ, adapted to the drama. We have seen reason also to infer that the coronis or colophon of this climax of fictions, (one rising in wonder, or atrocity, above another,) the recession of the sun in the heavens, out of horror and aversion at such a spectacle as that of the banquet, was added by Euripides[h]. Of these inventions of the later poets, and particularly of the dramatists, the earliest was very likely *a priori* to be the involuntary detention at Aulis, and the cause to which it was due, the offence given by Agamemnon to Artemis[i]; for which there was to a certain extent an historical foundation. For that the Greeks assembled at Aulis *against* the expedition, and that this assembling was going on during the season of the Etesian winds, and conse-

[g] Vol. i. 334. sqq. [h] F. Catholic. loc. cit.
[i] See supra, page 103.

quently that they must have waited there until these winds were over, may be collected from Homer; that they were detained against their will, or contrary to their expectation, does not appear from him. Now the first falsification of the truth of history in this respect—the story of the detention, as the effect of bad weather, (stormy or tempestuous weather,) had already come into vogue, by the time of Hesiod, but nothing beyond that—not even the fiction of the anger of Artemis, much less of its effect, the sacrifice of Iphigenia: as may be inferred from his allusion to the former, but to neither of the latter.

> Οὐ γὰρ πώποτε νηΐ γ' ἐπέπλων εὐρέα πόντον,
> εἰ μὴ ἐς Εὔβοιαν ἐξ Αὐλίδος, ᾗ ποτ' Ἀχαιοὶ
> μείναντες χειμῶνα πολὺν σὺν λαὸν ἄγειραν
> Ἑλλάδος ἐξ ἱερῆς, Τροίην ἐς καλλιγύναικα [k].

viii. The scholiast on the Odyssey[l] remarks that the name of the Nile (Νεῖλος) was unknown to Homer; and if he gives that river any proper name, it is that of the country, Ægyptus:

> Στῆσα δ' ἐν Αἰγύπτῳ ποταμῷ νέας ἀμφιελίσσας [m].

In the Theogonia it is spoken of by that name as a well known and familiar designation[n]; and the genealogy of rivers begins with the Nile as the first, the oldest, and the most notorious of all:

> Τηθὺς δ' Ὠκεανῷ ποταμοὺς τέκε δινήεντας,
> Νεῖλόν τ' Ἀλφειόν τε καὶ Ἠριδανὸν βαθυδίνην—

And so on, through twenty-two more names, some known to Homer, most of them unknown. Proclus observes on this passage; *Καὶ ἐκ τούτου φαίνεται Ἡσίοδος Ὁμήρου νεώτερος· καὶ γὰρ Ὅμηρος Αἴγυπτον καλεῖ τὸν Νεῖλον.* And to the like effect Eustathius[o]: *Ὁ δὲ Ἡσίοδος, ὡς ἂν νεώτερος, Νεῖλον ἤδη καλούμενον οἶδεν αὐτόν.* We explained the etymon of this name on a former occasion[p]; and shewed that it must have been derived to the Greeks from the Egyptians. Solon, the contemporary of Hesiod (as we believe), used the name just as familiarly as he does:

> Νείλου ἐπὶ προχοῇσι, Κανωβίδος ἐγγύθεν ἀκτῆς [q]—

[k] Opera et Dies, 648.
[l] Od. Δ. 477 = 581.
[m] Od. Ξ. 258: P. 427.
[n] v. 337.
[o] Ad Od. iv. 581. 1510. 3. Cf. Strabo i. 2. p. 46.
[p] F. Catholici, ii. 392: iii. 26. 378.
[q] Fragm. xxii.

and there can be no doubt that Solon some time or other visited Egypt *.

In like manner, though the star called Sirius was well known to Homer, its *name* of Sirius was not yet known to him. He describes it as the ἀστὴρ ὃς ὀπώρης εἶσι—or calls it the ἀστὴρ ὀπωρινός: and he may be said to recognise by implication its name of Κύων or Dog-star, by calling it also θρασὺν κύνα Ὠρίωνος. We may fairly infer then from this silence, that it was not commonly known in his time by the name of Sirius. And yet it must have been already known by that name in the time of Hesiod; and in fact by none so

* Æschylus is the author, next in antiquity to Hesiod, part of whose writings has come down to posterity entire; and in these alone the name of the Nile occurs eight or nine times.

Ἔνθα Βυβλίνων ὀρῶν ἄπο
ἵησι σεπτὸν Νεῖλος εὔποτον ῥέος.
Prom. 811.

Ἄλλους δ' ὁ μέγας καὶ πολυθρέμμων
Νεῖλος ἔπεμψεν. Persæ 33.

Πηγαῖς τε Νείλου γειτονῶν Αἰγυπτίου—
Ibid. 311.

Ἀπὸ προστομίων λεπτοψαμάθων
Νείλου— Supplices 4.

Καὶ Νεῖλος ἂν θρέψειε τοιοῦτον φυτόν.
Ibid. 281.

Οἶστρον καλοῦσιν αὐτὸν οἱ Νείλου πέλας.
Ibid. 308.

Νεῖλος γὰρ οὐχ ὅμοιον Ἰνάχῳ γένος—
Ibid. 497.

Ἱκνεῖται δ' εἰσικνουμένη βέλει
βουκόλου πτερόεντος
Δῖον πάμβοτον ἄλσος,
λειμῶνα χιονόβοσκον ὄντ' ἐπέρχεται Τυφῶ μένος,
ὕδωρ τὸ Νείλου νόσοις ἄθικτον.
Ibid. 556. cf. 879: 922: 1025.

Anacreon, xxxiii. Εἰς χελιδόνα. 4.

Χειμῶνι δ' εἰς ἄφαντος
ἢ Νεῖλον ἢ 'πὶ Μέμφιν.

Cf. Pindar, Pythia, iv. 99: Isthmia, ii. 62: vi. 33: Fragm. Incerta, lxxxiv.

properly as that. He mentions it three times in the Works and Days[r], and twice in the Aspis[s]; yet always by this name. And this name too must have originally come to the Greeks from Egypt[t].

Now the time from which the intercourse between Greece and Egypt may be supposed to have become regular and stated, and consequently the use of such terms as these, whether for the river, or for its tutelary genius the Dog-star, to have become familiar to the Greeks—cannot be dated earlier than the reign of Psammitichus; which we had occasion to consider in our Fasti Catholici, and by the testimony of the Apis cycle to fix to B. C. 673[v]: at which time a colony of Ionians[x] were settled in Egypt under his protection, in return for the service which they had rendered him, in mastering his colleagues. Nor is there in fact any instance of the use of either of these Egyptian names (Νεῖλος or Σείριος), and in particular of the latter, in any Greek writer, even older than Hesiod, who can be shewn on good grounds to have been older than B. C. 673 †.

† The star in question was known by this name to Archilochus *[1]:

Ἔλπομαι πολλοὺς μὲν αὐτῶν Σείριος καταυανεῖ
ὀξὺς ἐλλάμπων.

r 415. 585. 607.

s 153. 397.

t Cf. our Fasti Catholici, iii. 26, 32.

v Fasti Catholici, ii. 544.

x Herodotus, ii. 152. ii. 154, he gives us to understand these Greek mercenaries were settled first at the *Στρατόπεδα* near Bubastis: cf. Diodor. Sic. i. 66, 67—*μικρὸν ἐπάνω τοῦ Πηλουσιακοῦ στόματος*. Both agree that they were removed from thence by Amasis to Memphis. Herodotus, ii. 178, 179, informs us also that Naucratis was first given to the Greeks by Amasis, and that it was formerly the only free port in Egypt. Strabo, xvii. 1. 439 a, speaks of the *Μιλησίων τεῖχος* as an earlier foundation than Naucratis, yet in the same Nome; and in the reign of Psammitichus and Cyaxares, who were more or less contemporaries. Athenæus, himself a native of Naucratis, xv. 18, implies it was already in existence Ol. xxiii. B. C. 688–684. Ol. xxxiii. B. C. 648–644 would probably be nearer to the truth.

* The age of Archilochus indeed is a very uncertain point, as may be seen from the Fasti Hellenici of Mr. Clinton (vol. i. p. 147. 174–192: cf. also ad ann. A. C. 693. 687. 665); and one date of his age would make him as early as B. C. 708—but solely on the authority of the tradition that he took part in the colony to Thasos; which Xanthus the Lydian dated Ol. xviii. B. C. 708, and Dionysius, Ol. xv. B. C. 720. Cf. Clem. Alex. i. xv. 131. 88. 21—89. 3: and Steph. Byz. *Θάσος*. That he might have taken part in the colony to Thasos, some time or other of his life, is very possible, and seems to be asserted by that one of his own fragments, to which we referred supra:

Ὡς Πανελλήνων ὀϊζὺς ἐς Θάσον συνέδραμεν—

but not necessarily on this occasion. It cannot be inferred that he was con-

1 Poetæ Min. Græc. Fragm. xlii: Plutarch, Symposiaca, iii. x. 2.

It was known by the same name to Alkæus, as we shall see by and by: and Alkæus, according to his own testimony, had been in Egypt[2]. It must have been known to Ibycus, as may be collected from the following glosses of the ancient Greek Grammarians: Σείριος[3]. ὁ ἥλιος καὶ ὁ τοῦ κυνὸς ἀστήρ—Σειρίου κυνὸς δίκην[3]. Σοφοκλῆς τὸν ἀστρῷον κύνα. ὁ δὲ Ἀρχίλοχος τὸν ἥλιον· Ἴβυκος δὲ πάντα τὰ ἄστρα—Σείριος[4]. κυρίως τὸν τοῦ κυνός· ὅτε δὲ καὶ τοὺς ἄλλους ἀστέρας—Σίρια[4]. . Ἴβυκος δὲ πάντα τὰ ἄστρα Σίρια—Σείριον[5]. τὸν κύνα· ὅτε δὲ καὶ τὸν ἥλιον· Ἴβυκος δὲ πάντα τὰ ἄστρα σείρια καλεῖ[6]. It occurs in Æschylus[7]:

> Ῥίζης γὰρ οὔσης φυλλὰς ἵκετ' ἐς δόμους,
> σκιὰν ὑπερτείνασα Σειρίου κυνός.

Much more in the later poets—

> Ὠρίων ἢ Σείριος ἔνθα πυρὸς φλογέας ἀφίη-
> σιν ὄσσων αὐγάς[8].

> Σείριος, ἐγγὺς τῆς ἑπταπόρου
> Πλειάδος ᾄσσων ἔτι μεσσήρης[9].

The rule of diet during the Dog-days, which Hesiod recommended to his readers, viz. to sit in the shade, inhaling the cool breath of the west wind, and drinking a light wine, or a strong wine mixed with water, (especially this latter part of it, of the use of wine for the period in question,) is ascribed to others of the ancients—later than Hesiod—who might consequently have learnt it from him[10]: Εὔπολιν μὲν γὰρ (εἰ βούλει) πάρες ἐν Κόλαξιν εἰπόντα·

> Πίνειν γὰρ ὁ Πρωταγόρας ἐκέλευεν ἵνα
> πρὸ τοῦ κυνὸς τὸν πλεύμον' ἔκλυτον φορῇ.

πάρες δὲ καὶ τὸν κομψὸν Ἐρατοσθένην λέγοντα·

> Καὶ βαθὺν ἀκρήτῳ πνεύμονα τεγγόμενος.—

In pulmonem defluere potum nec poetæ nobiles ignorant. ait enim Eupolis in fabula quæ inscribitur Colaces,

temporary with Gyges king of Lydia, B. C. 717–669, merely from Herod. i. 12, or from his own reference to Gyges by name, in the verses there alluded to by Herodotus, which are still extant—Fragm. x Οὔ μοι τὰ Γύγεω τοῦ πολυχρύσου μέλει—no more than that Anacreon was so, who also refers to Gyges, just in the same way,

> Οὔ μοι μέλει Γύγαο
> τοῦ Σάρδεων ἄνακτος—Od. xv.

It should be remembered that as Archilochus fell in battle, he must have died comparatively early in life; while he was still of the military age at least—probably between 40 and 50. In our opinion the true period of his ἀκμὴ was the latter end of the reign of Psammitichus, (B. C. 673–619 or 620,) and he probably died not long before Hesiod was born (B. C. 619, as we hope to see by and by). By that time the intercourse between Greece and Egypt might have come to be stated and regular; and the name of the Nile, of Sirius, and the like, though derived from Egypt, might have become familiar to the Greeks.

2 Strabo, i. 2. 57, 58.

3 Hesychius.

4 Photii Lex.

5 Suidas.

6 Cf. Hesychius, Σειριᾷ: Eratosthenes, καταστερισμοὶ, xxiii: Anecdota Græca Bodl. ii. 261. 20. Σείριος: Etym. M. Σειραίνω.

7 Agam. 966.

8 Euripides, Hecuba, 1104.

9 Iphigenia in Aulide, 7.

10 Plutarch, Sympos. vii. 1. 3.

Πίνειν γὰρ ὁ Πρωταγόρας ἐκέλευεν ἵνα
πρὸ τοῦ κυνὸς τὸν πνεύμον' ἔκλυτον φορῇ.

Et Eratosthenes testatur idem:

Καὶ βαθὺν ἀκρήτῳ πνεύμονα τεγγόμενος.

Euripides vero hujus rei manifestissimus adstipulator est:

Οἶνος περάσας πνευμόνων διαρροάς [11].

Ἄφρονες ἄνθρωποι καὶ νήπιοι, οἵτινες οἶνον
μὴ πίνουσ' ἄστρου καὶ κυνὸς ἀρχομένου [12].

According to the ancients also, a precept, exactly the same with this of Hesiod's, enjoining the same rule of life for the same season of the year, was some time or other given by the oracle of Delphi: Οἵ ὑπὸ γλωσσαλγίας ἐπιλελῆσθαί μοι δοκοῦσι καὶ τοῦ Πυθικοῦ χρησμοῦ, ὃν ἀναγράφει Χαμαιλέων·

Εἴκοσι τὰς πρὸ κυνὸς καὶ εἴκοσι τὰς μετέπειτα
οἴκῳ ἐνὶ σκιερῷ Διονύσῳ χρῆσθαι ἰητρῷ [13].

And we learn from Œnomaus, apud Eusebium [14], that this oracle was given to the Athenians, ὑπὸ καύματος ἐνοχλουμένοις—in some very hot summer. The resemblance between it and Hesiod's is perceptible at first sight, especially in the οἴκῳ ἐνὶ σκιερῷ of the one, and the ἐν σκιῇ ἑζόμενον of the other; and in the drinking of wine meanwhile in the midst of the dog-days and in the shade, in both. Which then is it most reasonable to suppose took it from the other? the oracle from Hesiod, or Hesiod from the oracle? On that point we leave the reader to judge for himself.

But with respect to the first conception or recommendation of a sanitory rule like this, and whether it is to be ascribed to Hesiod or not—a fragment of Alkæus is frequently quoted, which should by all means be compared with this passage of the Opera et Dies, 580–594: Φησὶ δὲ καὶ Ἀλκαῖος ὁ Μιτυληναῖος ποιητής·

Οἴνῳ πνεύμονα τέγγε· τὸ γὰρ ἄστρον περιτέλλεται·
ἡ δ' ὥρη χαλεπή· πάντα δὲ διψᾷ ὑπὸ καύματος.

καὶ ἀλλαχοῦ,

Πίνωμεν· τὸ γὰρ ἄστρον περιτέλλεται [15].

Proclus, on the place in Hesiod, observes from Plutarch [16]: Τοιαῦτα δὲ καὶ τὸν Ἀλκαῖον ᾄδειν·

Τέγγε πνεύμονας οἴνῳ, τὸ γὰρ ἄστρον περιτέλλεται·
ἁ δὲ ὥρα χαλεπά—
ἀχεῖ δ' ἐκ πετάλων. τάδε ἂν (ἀχέτα) τέττιξ.
ἀνθεῖ δὲ καὶ σκόλυμος· νῦν δὲ μιαρώταται γυναῖκες
λεπτοὶ δέ τοι ἄνδρες, ἐπεὶ κεφαλὴν καὶ γούνατα
Σείριος ἄζει [17].

Compare with this Hesiod's description of the same season, and by the

[11] Macrob. Saturn. vii. 15. 273.
[12] Theognis, 1035.
[13] Athenæus, i 41.
[14] Præp. Evang. v. 30. 225 C.
[15] Athenæus, i. 41: cf. x. 35.
[16] Cf. Plutarchi Fragmenta, xxxiii.
[17] Cf. Symposiaca, vii. i. 1: A. Gellius, xvii. 11: Macrob. vii. 15. 271: Suidas, Τέγγει: Scholia in Aristoph. Pax, 1159.

In our opinion too, another intimation of a close connection between Greece and Egypt, in the time of Hesiod, is discoverable in the Works and Days, though it has hitherto escaped his commentators. As the best mode of passing the dog-days, he recommends the *σκιὴ πετραίη*, the *μάζα ἀμολγαίη*, the *γάλα αἰγῶν σβεννυμενάων*, and also the use of a certain wine, which he calls *βίβλινος*.

same natural characters, not only the Dog-star, and its supposed effects in inflaming women and weakening men, but the singing of the *τέττιξ*, and the flowering of the *σκόλυμος*, (a sort of wild thistle, or artichoke, which flowered only at midsummer, in the hottest season of the year) [18].

> Ἦμος δὲ σκόλυμός τ' ἀνθεῖ, καὶ ἠχέτα τέττιξ
> δενδρέῳ ἐφεζόμενος λιγυρὴν καταχεύετ' ἀοιδὴν
> πυκνὸν ὑπὸ πτερύγων, θέρεος καματώδεος ὥρῃ—κ', τ. λ.

It must be admitted that the resemblance between these descriptions respectively is too great to have been accidental. But if it is not, one of them must have been taken from the other: and, in our opinion, the first idea of Hesiod's was borrowed from the corresponding one of Alkæus. For though Hesiod was probably part of his life a contemporary of Alkæus, yet if he was still young, B. C. 606, as we shall see by and by, and Alkæus was the contemporary and equal in years of Pittacus of Mytylene, (one of the seven wise men,) and consequently of Solon also; he must have been some years older than Hesiod: and Hesiod was much more likely to have borrowed from him, than he from Hesiod.

A fragment has been preserved, attributed to Hesiod, which if genuine would prove that he must have been acquainted with the name of the Phœnix, and consequently have heard of the fable of the Phœnix [19].

> Ἐννέα τοι ζώει γενεὰς λακέρυζα κορώνη
> ἀνδρῶν ἡβώντων· ἔλαφος δέ τε τετρακόρωνος·
> τρεῖς δ' ἐλάφους ὁ κόραξ γηράσκεται· αὐτὰρ ὁ φοῖνιξ
> ἐννέα τοὺς κόρακας· δέκα δ' ἡμεῖς τοὺς φοίνικας
> Νύμφαι ἐϋπλόκαμοι, κοῦραι Διὸς αἰγιόχοιο.

One of these Nymphs of course is speaking. This fragment is often quoted. The *φοῖνιξ* here mentioned is not meant of the tree so called, but of the bird. If so, the author of this Fragment must have heard of the Phœnix: and that knowledge could have come to him only from Egypt. And though the exaggerated longevity, which he attributes to the Phœnix, is a proof that he could not have received a correct account of the Fable, yet that is just the kind of account which it might be expected *a priori* would first pass to the Greeks.

18 Opp. et Dies, 580: cf. Aspis, 393-401.

19 Cf. the Poetæ Minores Græci. Hesiodi Fragm. I.: or Plutarch, De Defectu Oraculorum, xi.

Ἀλλὰ τότ' ἤδη
Εἴη πετραίη τε σκιὴ καὶ βίβλινος οἶνος [y].

We may infer from the Etymologicum Magnum [z], that there was a various reading of this epithet. Βύβλινος, not βίβλινος; and as such it is quoted by Eustathius [a]: Οὕτω καὶ Βύβλινος οἶνος ἀπὸ τόπου, ὁ παρ' Ἡσιόδῳ. Βυβλία γὰρ φασὶ χώρα Θρᾴκης, ἐξ ἧς ἦν ἐκεῖνος. The gloss appended to this reading may be in error; but it ascertains the reading nevertheless.

That Hesiod did not mean wine, properly so called, when he alluded to this Βύβλινος οἶνος, may be inferred from the sequel of the same directions—

Ἐπὶ δ' αἴθοπα πινέμεν οἶνον
ἐν σκιῇ ἑζόμενον, κεκορημένον ἦτορ ἐδωδῆς,
ἀντίον ἀκραέος Ζεφύρου τρέψαντα πρόσωπον,
κρήνης τ' ἀενάου καὶ ἀπορρύτου, ἥ τ' ἀθόλωτος—

from which spring he recommends the dilution of this wine, in the proportion of three parts water to one of wine; implying thereby that he was speaking of a wine properly so called, and a strong wine too: and therefore, if he was speaking of wine before, it must have been of some very weak or very light one, in comparison of this.

The different explanations of this allusion, which appear to have been proposed, prove one thing very clearly; viz. that the ancient commentators must have been greatly at a loss to understand it *. In our opinion, the truth is something

* Tzetzes was of opinion that this wine was so called from Byblus in Phœnicia. Archestratus, apud Athen. [1], recognises such a wine—

Τόν τ' ἀπὸ Φοινίκης ἱερᾶς, τὸν Βύβλιον αἰνῶ.

Probably also Ἀχαιὸς, apud eundem [2]: Ἀχαιὸς δὲ τὸν Βίβλινον·

Ἐδεξιοῦτο Βιβλίνου μέθυος ἐκπώμασι.

καλεῖται δ' οὕτως ἀπό τινος χωρίου οὕτω προσαγορευομένου. φησὶ δὲ Φιλύλλιος ὅτι

Παρέξω Λέσβιον, Χῖον σαπρὸν,
Θάσιον, Βίβλινον, Μενδαῖον, ὥστε κραιπαλᾶν
μηδένα—

The majority of commentators on Hesiod however understood the allusion of a wine which was produced in some part of Thrace, called Βίβλος, or Βιβλία. Athen. loc. cit.: Ἀρμενίδας δὲ τῆς Θρᾴκης φησὶν εἶναι χώραν τὴν

y Verse 586. z Βύβλος, Βυβλίον. a Ad Il. Α. 641.871.49.
1 i. 52. 2 i. 56.

very simple. Hesiod probably intended by this wine of Byblus, a liquor extracted from the Byblus. The Byblus, the Lotus, and the Papyrus, were three of the principal vegetable productions of Egypt; to which the support of its numerous population was materially due. Herodotus attests the use of the byblus as follows[b]: *Τὴν δὲ βύβλον τὴν ἐπέτειον γινομένην ἐπεὰν ἀνασπάσωσι ἐκ τῶν ἑλέων, τὰ μὲν ἄνω αὐτῆς ἀποτάμνοντες ἐς ἄλλο τι τράπουσι· τὸ δὲ κάτω λελειμμένον ὅσον τε ἐπὶ πῆχυν τρώγουσι καὶ πωλέουσι· οἱ δὲ ἂν καὶ κάρτα βούλωνται χρηστῇ τῇ βύβλῳ χρέεσθαι, ἐν κλιβάνῳ διαφανέϊ πνίξαντες οὕτω τρώγουσι.* In Egypt, where the vine did not flourish,

Βιβλίαν—Βίβλινος οἶνος· ὁ αὐστηρὸς, ἀπὸ Βιβλίνης οὕτω καλουμένης Θρᾳκίας ἀμπέλου, οἷον,

Ὕδωρ δὲ πίνει τὸν δὲ Βίβλινον στυγεῖ—

Βίβλινος οἶνος[3]*· ἔστιν οὖν ὁ Βίβλινος εἶδος οἴνου, καὶ γένος ἀμπέλου ἐν Θρᾴκῃ κ', τ. λ.—Βίβλινος*[4]*· εἶδος οἴνου, καὶ γένος ἀμπέλου ἐν Θρᾴκῃ. καὶ ὁ παλαιὸς οἶνος. Ἐπίχαρμος δὲ ἀπὸ ὀρῶν Βιβλίνων. ἔστι δὲ Θρᾴκης.—Βίμβλινος*[5]*· εἶδος οἴνου. καὶ γένος ἀμπέλου ἐν Θρᾴκῃ. καὶ ὁ ἁπαλὸς (παλαιὸς) οἶνος· Ἐπίχαρμος δὲ τὸν ἀπὸ ῥοιῶν (ὀρῶν) Βιμβλίνων. ἔστι δὲ Θρᾴκης.* This gloss of *παλαιὸς οἶνος* probably refers to Theocritus—

Ἀνῷξα δὲ Βίβλινον αὐτοῖς
εὐώδη τετόρων ἐτέων σχεδὸν ὡς ἀπὸ λανῶ[6]—

Ἐκ δ' ἐπίμπλαμεν δρόσου
κρατῆρας ἱροὺς Βιβλίνου τε πώματος[7].

The allusion to Epicharmus in these glosses is explained by Athenæus[8]: *Ἐπίχαρμος δὲ ἀπό τινων ὀρῶν Βιβλίνων φησὶν αὐτὸν ὠνομάσθαι*—but as it may be collected from the same passage, they were probably mistaken in understanding Epicharmus to have meant mountains so called in Thrace. There were *ὄρη Βύβλινα* in Egypt, known to Æschylus at least.

Ἔνθα Βυβλίνων ὀρῶν ἄπο
ἵησι σεπτὸν Νεῖλος εὔποτον ῥέος[9].

And according to the Scholiast on the Prometheus, there was a city in Egypt called Βύβλος—Ἡ δὲ Βύβλος πόλις ἐστὶν Αἰγύπτου—situated too in the island Prosopitis. Cf. D'Anville, and Steph. Byz. in Βύβλος: Phot. Cod. 72; and Ctesiæ Persica, pag. 40. l. 9. Festus probably meant wine from this city, in the gloss—Bubleum est genus quoddam vini[10]. And Hesiod might have meant it too by his *Βύβλινος οἶνος*: for there is no reason why, though it came from Βύβλος, it might not have been made of the byblus.

[b] ii. 92.

[3] Etym. M.
[4] Anecdota Græca, 225. 31.
[5] Hesychius.
[6] Idyll. xiv. 15.
[7] Euripides, Ion, 1194.
[8] i. 56.
[9] Prometheus, 811.
[10] ii. 55.

(except in certain parts of the country,) many artificial beverages might be made; which would serve as a substitute for wine. Æschylus mentions one, obtained from barley[c].

Οὐ πίνοντας ἐκ κριθῶν μέθυ.

That wine was extracted from the lotus, in Africa, by the Lotophagi, we have the testimony of Herodotus[d], and still more particularly that of Polybius[e]: *Γίνεται δὲ καὶ οἶνος ἐξ αὐτοῦ βρεχομένου καὶ τριβομένου δι' ὕδατος, κατὰ μὲν τὴν γεῦσιν ἡδὺς καὶ ἀπολαυστικὸς, οἰνομέλιτι χρηστῷ παραπλήσιος, ᾧ χρῶνται χωρὶς ὕδατος. οὐ δύναται δὲ πλέον δέκα μένειν ἡμερῶν· διὸ καὶ ποιοῦσι κατὰ βραχὺ πρὸς τὴν χρείαν· ποιοῦσι δὲ καὶ ὄξος ἐξ αὐτῶν*[f]. It is just as probable that a light wine might have been made both from this plant, and also from the byblus, in Egypt. Chaplets at least, to be worn over the wine, were made of the byblus, in Egypt, and particularly at Naucratis[g]: and perhaps Æschylus may have alluded to wine of the byblus, where he observes[h]:

Βύβλου δὲ καρπὸς οὐ κρατεῖ στάχυν.

ix. The children of Kirke by Ulysses are mentioned in the Theogonia as follows[i]—

Κίρκη δ' Ἠελίου θυγάτηρ Ὑπεριονίδαο
γείνατ' Ὀδυσσῆος ταλασίφρονος ἐν φιλότητι
Ἄγριον ἠδὲ Λάτινον ἀμύμονά τε κρατερόν τε,
(Τηλέγονόν τε ἔτικτε διὰ χρυσῆν Ἀφροδίτην)
οἳ δή τοι μάλα τῆλε μυχῷ νήσων ἱεράων
πᾶσιν Τυρσηνοῖσιν ἀγακλειτοῖσιν ἄνασσον.

The fourth of these lines is probably an interpolation. But whence, we may ask, did Hesiod obtain his knowledge of the two other sons of Kirke and Ulysses? and where did he find their names, Agrius and Latinus? That tradition was not uniform on this point, we learn from the commentary of Eustathius[k]; according to which the sons of Kirke and Ulysses were called by some Auson and Latinus, not Agrius and Latinus[l] *. It is certain however that neither of these

* The most probable explanation of this difference is that Hesiod had

[c] Supplices, 953: cf. Herod. ii. 77.

[d] iv. 177.

[e] Lib. xii. 2. § 7. Cf. Athenæus, xiv. 65: Theophrastus, Hist. Pl. iv. 3, 1: Pliny, H. N. xiii. 32. 762: Scholia in Platon. ii. 416: Respublica, viii. 407. 5. *Λωτοφάγους.*

[f] Cf. Eustathius, ad Od. i. 34. 1616. 32. 59.

[g] Athenæus, xv. 11: Hesychius, *Ναυκρατίτης στέφανος.*

[h] Supplices, 761.

[i] v. 1011.

[k] *Προοίμιον* Comm. in Odyss. 1379. 20.

[l] Cf. ad Od. Π. 118, 1796. 9 sqq.:

heard of the Prisci Latini and also of the Aborigines, whom Italian tradition represented as men in a state of nature, savage or wild men; i. e. such as the Greeks would have called Ἄγριοι: but he had not yet heard of Ausonia, as another of the names of Italy, nor of the Ausones, as the people who gave it that name. He might therefore found upon the Homeric narrative of the adventures of Ulysses in these parts, the fiction of two sons of Ulysses and Kirke, of the names of Ἄγριος and Λατῖνος, the fathers or kings of the different races of the inhabitants of Italy, known to him; but he could not have imagined, on the same authority, two such sons as Auson and Latinus. Κίρκην ἑσπερίης[1]· Ἠκόλουθησεν Ἀπολλώνιος τοῖς κατὰ τὸ Τυρσηνικὸν πέλαγος ὑποτιθεμένοις τὴν Ὀδυσσέως πλάνην, ὧν ἀρχηγὸς Ἡσίοδος κ', τ. λ—

> Ἀλλὰ θεαὶ πῶς τῆσδε παρὲξ ἁλὸς ἀμφί τε γαῖαν
> Αὐσονίην[2]—

Μέμφονται δέ τινες τὸν Ἀπολλώνιον, ὡς περὶ τούτους τοὺς χρόνους εἰρηκότα τὴν Ἰταλίαν Αὐσονίαν. ὕστερον γὰρ χρόνοις τῶν Ἀργοναυτικῶν οὕτω κέκληται ἀπὸ Αὔσονος τοῦ Ὀδυσσέως καὶ Καλυψοῦς[3]. The Argonautica of the pseudo-Orpheus fall into the same anachronism[4]—Ausoniam adpellavit Auson Ulyssis et Calypsûs filius eam primum partem Italiæ, in qua sunt urbes Beneventum et Cales . . . . a quo etiam conditam fuisse Auruncam urbem ferunt[5].

> Εἰσὶν δ' ἐπάνω μὲν τῶν Πελασγῶν Ὀμβρικοί,
> οὓς ᾤκισεν ὁ 'κ Κίρκης Ὀδυσσεῖ γενόμενος
> Λατῖνος, Αὔσονές τε μεσόγειον τόπον
> ἔχοντες, Αὔσων οὓς συνοικίσαι δοκεῖ
> Ὀδυσσέως παῖς καὶ Καλυψοῦς γενόμενος[6].

Sane Hesiodus Latinum Circes et Ulyssis filium dicit[7]. Cf. ad xii. 164. —Ejusdem Minervæ monitu Telegonus Penelopen, Telemachus Circen duxerunt uxores. Circe et Telemacho natus est Latinus, qui ex suo nomine Latinæ linguæ nomen imposuit. ex Penelope et Telegono natus est Italus, qui Italiam ex suo nomine denominavit[8].

It is far from improbable that, as this name of Ausones appears to have been considered the proper appellation of the oldest inhabitants of Italy, it was in reality as old there as the first settlement of a colony in that country; and this colony having been that of the Umbrians, that this name like the Umbrians themselves (see our Origg. Kal. Italicæ, ii. 370. sqq.) ultimately came from Egypt. We find in the vocabulary of ancient

Schol. in Apollonium Rhodium, iii. 200: iv. 553: Steph. Byz. in Ἄντεια: Tzetzes, ad Lycophron. 44: Lydus de Mensibus, i. § 13. pag. 7.

1 Scholia in Apollon. Rhodium, iii. 311.
2 Ad iv. 552.
3 Cf. Strabo, ii. 5. 195 b.
4 1254.
5 Festus, i. 45
6 Skymnus Chius, l. 225: Geogr. Min. ii. 14: cf. Dionys. Perieg. 78. and Eustath. in loc.
7 Servius ad Æneid. vi. 47: cf. ad xii. 164.
8 Hyginus, Fabb. cxxvii. Telegonus. Of Auson, Ausones, and Ausonia—cf. Serv. ad Æn. iii 171. 477: vii. 72: xii. 836.

names could have been derived from Homer; and it is just as evident that they must some time or other have been given to these supposed sons of Kirke, under the idea that some sons of Kirke and Ulysses, and under those names respectively, were the founders of the Ausones or Ausonians, and the Latini, in Italy. And though one of these in Hesiod bears the name of Agrius, the other is called Latinus; and both are described as the first kings of the *Τυρσηνοὶ* in some remote but sacred island of the west, which could have been meant of nothing but the country of the Tyrrhenians, or Etrurians, of ancient Italy. We are authorized to infer from such suppositions that Hesiod must have written after the time when not only Magna Græcia, or that side of Italy on the east and south, which was first colonized by the Greeks, but the opposite side also, which gave its name to the Mare Tyrrhenum, was more or less known to them; and that was not the case until long after the time of Homer[m]. The common tradition of the visit of Pythagoras to Italy, in the reign of Numa Pompilius, would imply that the Greeks might have begun to have some knowledge of this part of Italy as early as B. C. 713; but the better informed were aware this tradition was founded on a misapprehension of the truth, and that Pythagoras' visit could not be dated earlier than the reign of Tarquinius Superbus[n]. Pythagoras was younger than Hesiod; or at least not older than he: and Hesiod, in our opinion, was contemporary partly with Tarquinius Priscus, and partly with Servius Tullius. And as we know from Roman history that Rome and Corinth had begun to be connected even be-

Egyptian terms, (recovered from the monuments,) of the Chevalier Bunsen (Standing of Egypt, i. 458. No. 95,) the word *Au* marked with an asterisk; intimating that it was a word in use before the so called xiith dynasty (see p. 453.) and in the sense of, "Born of:" and this word in that sense, compounded with On (the Egyptian name of Heliopolis) might give birth to Au-s-on in the sense of the people of On—whence *Αὔσων* in Greek, and *Αὔσονες*, and in Latin Auson, Ausones, Ausonia, &c. The name of Ausones seems to have been interchangeable also with that of Aurunci; and assuming such a name as that of Onka, for the Egyptian Isis, (of which more hereafter,) it would not be difficult to derive Aurunci or Aurunki from Au and Onka—in the sense of the people of Onka or Isis.

m Cf. our Origines Kalendariæ Italicæ. ii. 564. note.

n Cf. our Origines Kal. Italicæ, i. 264.

fore the reign of the former, it is evidently possible that from the same time forward something might have begun to be known to the Greeks about the Prisci Latini and the Tyrrhenians, only the better adapted by its possible indefiniteness to take up the adventures of Ulysses in the same quarter, as known from Homer, through the subsequent history of his children and Kirke's.

x. *Τοὺς δὲ μέτ' ἀστέρα τίκτεν Ἑωσφόρον Ἠριγένεια,*
ἄστρα τε λαμπετόωντα τά τ' οὐρανὸς ἐστεφάνωται [o].

It is observable of this passage that it gives the genealogy of Lucifer or the morning star, but not that of Hesperus or the evening star, which, if supposed to be distinct from the other, was *a priori* the more likely to have been mentioned: because this star shines in the evening or night time, Lucifer only in the morning or day time. In the time of Homer, these two stars were still supposed to be distinct. He has mentioned them both; and one of them clearly as different from the other. Let it be assumed then that, between his time and Hesiod's, the discovery had been made that the morning and the evening star were one and the same, in a different position and under a different aspect. On that supposition Hesiod's omission of the pedigree of Hesperus will cease to be surprising; but it will not be without a meaning. Having declared the parentage and birth of Lucifer, he had specified those of Hesperus: and as morning preceded evening, and sunrise sunset, he would naturally consider the first, and as it were *primogenial*, relation of this star, to have been to the former not to the latter. It must have come into existence as Lucifer, not as Hesperus; and its proper genealogy must have been that of the son of the Dawn, not of the Twilight.

The question is then, How long after the time of Homer was this discovery made? Many of the ancients attribute it to Pythagoras, as Diogenes Laert.[p] *Πρῶτόν τε Ἕσπερον καὶ Φωσφόρον τὸν αὐτὸν εἰπεῖν, ὥς φησι Παρμενίδης*: as also Pliny[q]—who dates both Pythagoras and his discovery Ol. xxxii. U.C. 113—where there is a various reading of Ol. xxxiii.—

[o] Theogon. 381.

[p] Lib. viii. cap. 1. § xiv. Yet in the Life of Parmenides, he attributes it to him. ix. cap. iii. § iii. 23: cf. Suidas in Ἕσπερος.

[q] H. N. ii. 6. 208.

which would agree better with U.C. 113. B.C. 641. The age of Pythagoras indeed is a doubtful point; yet the most probable opinion is that he was contemporary with Polycrates of Samos, and Amasis king of Egypt, and Cyrus or Cambyses kings of Persia. If so, he was younger than Hesiod, and Hesiod could not have acquired his knowledge of the identity of the morning and the evening star from him. But there is reason to doubt whether he was the first who made this discovery among the Greeks*. The Scholiast on Basil asserts

* With respect to Homer, and his knowledge of the identity of the morning and the evening star[1];

> *Οἷος δ' ἀστὴρ εἶσι μετ' ἄστρασι νυκτὸς ἀμολγῷ*
> *Ἕσπερος, ὃς κάλλιστος ἐν οὐρανῷ ἵσταται ἀστήρ.*

On which the Schol.: *Ἡ διπλῆ, ὅτι νῦν τὸν Ἕσπερον κάλλιστον, ἐν ἄλλοις δὲ τὸν Ἑωσφόρον φαάντατον .... ἕτερον δὲ τὸν Ἕσπερον ὡς ἂν παλαιὸς οἶδε τοῦ Ἑωσφόρου.*

> *Ἦμος δ' Ἑωσφόρος εἶσι φόως ἐρέων ἐπὶ γαῖαν,*
> *ὅν τε μέτα κροκόπεπλος ὑπεὶρ ἅλα κίδναται ἠώς*[2]—
> *κ, τ. λ.*

> *Εὖτ' ἀστὴρ ὑπερέσχε φαάντατος, ὅς τε μάλιστα*
> *ἔρχεται ἀγγέλλων φάος Ἠοῦς ἠριγενείης*[3].

As to the question of the first who made known this identity to the Greeks; Stobæus[4]: *Παρμενίδης πρῶτον μὲν τάττει τὸν Ἑῷον, τὸν αὐτὸν δὲ νομιζόμενον ὑπ' αὐτοῦ καὶ Ἕσπερον—Ἀπολλόδωρος ἐν τῷ δευτέρῳ περὶ θεῶν Πυθαγορείαν εἶναί (φησι) τὴν περὶ τοῦ τὸν αὐτὸν εἶναι Φωσφόρον τε καὶ Ἕσπερον δόξαν*[5]—*Τὸν Ἀφροδίτας καὶ Φωσφόρω τοὶ πολλοὶ καλέοντι ... ὁ γὰρ αὐτὸς πόκα μὲν ἕσπερος γίγνεται ἑπόμενος τῷ ἁλίῳ ... πόκα δὲ ἑῷος αἴ κα προαγέηται τῶ ἁλίω, καὶ προανατέλλῃ ποτ' ὄρθρον. φωσφόρος ὢν πολλάκις μὲν γίγνεται ὁ τᾶς Ἀφροδίτας διὰ τὸ ὁμοδρομεῖν ἁλίῳ*[6]. But the scholiast on Basil and Achilles Tatius give us to understand that both names were applied to the same star, first by Ibycus—*Ὁ δὲ αὐτὸς Ἑωσφόρος καὶ Ἕσπερος. καιτοίγε τὸ παλαιὸν ἄλλος ἐδόκει εἶναι ὁ ἑωσφόρος καὶ ἄλλος ὁ ἕσπερος· πρῶτος δὲ Ἴβυκος ὁ Ῥηγῖνος συνήγαγε τὰς προσηγορίας*[7]—*Πρῶτος δὲ Ἴβυκος εἰς ἕνα συνέστειλε τὰς προσηγορίας*[8].

From the time of Pythagoras indeed it may be admitted that no one among the Greeks could have been ignorant of the truth on this point; but for the period before his time, especially from B.C. 600 and upwards, this could not yet have been the case: and as Sappho was writing during

1 Il. X. 317.
2 Il. Ψ. 226.
3 Od. N. 93.
4 Eclogæ Physicæ, i. 516. xxv. 1.
5 Ibid. 520.
6 Timæus, Opuscula Myth. 550.
7 Anecdota Oxon. iii. 413. 15. Excerpta varia.
8 Achilles Tatius, Isagoge ad Aratum 17. Uranol. 136 C.

that Ibycus of Rhegium was the first of the Greeks who applied both names to the same star: and as Ibycus is said to have flourished from the reign of Crœsus downwards, (B. C. 560,) and Hesiod himself flourished between B. C. 600 and B. C. 560, if the truth on that point was known to Ibycus, not later than B. C. 560, it might have been known to Hesiod, who was himself an astronomer—in whose name at least

this period, about the end of the seventh or the beginning of the sixth century before Christ, it may well be doubted whether the allusion in one of her fragments to Ἕσπερος is not to be understood of that star as distinct from the morning star:

Ἕσπερε πάντα φέρων ὅσα φαινόλις ἐσκέδασ' αὐώς [9]—

There is a similar sentiment in the Anthologia [10], which nevertheless recognises the identity of the stars:

Ἠοῦς ἄγγελε χαῖρε Φαεσφόρε, καὶ ταχὺς ἔλθοις
Ἕσπερος, ἣν ἀπάγεις λάθριος αὖθις ἄγων.

But their identity was known to every one in Meleager's time; though possibly not yet even suspected in Sappho's.

It would be an endless task to collect the allusions to these two stars in the later poets. Hesychius quotes from an anonymous poet—

Δείελος ὀψὲ δύων—

which he explains by ὁ ἑσπέριος ἀστήρ. In another instance he has the gloss, Ἐπιφάτνιος· ὁ ἑωσφόρος ἀστήρ. Strabo [11] tells us the public seal of the Locri Hesperii was this star: and it was probably adopted in that capacity before its identity with the morning star was yet known.

In Latin we may observe that the most characteristic name for the evening star was *Vesperugo*, for the morning star, was *Jubar* [12]: Vesperugo—vesper stella. Plautus, Nec vesperugo nec vergiliæ occidunt—Post supremam (horam) sequitur *vespera*, ante ortum scilicet ejus stellæ quam Plautus [13] vesperuginem, Ennius vesperum, et Vergilius Hesperon appellant [14]—Cum stella prima exorta, Græci vocant Ἕσπερον, nostri vesperuginem, ut Plautus,

Neque vesperugo neque vergiliæ occidunt.

exortæ stellæ tempus dictum a Græcis ἑσπέρα, Latine vesper: ut ante solem ortum quod eadem stella vocabatur jubar (quod jubata) Pacuvius dicit

Pastor exorto jubare noctis decurso itinere.

Ennius,

Ajax, lumen jubarve in cœlo cerno [15]?—

Aliquod lumen jubarve in cœlo cerno? Jubar dicitur stella Lucifer quæ

9 Cf. Etym. M. αὐὼς and ἕσπερος: Hesychius, αὐώς· ἡμέρα.

10 i. 22. Meleager, lxxiv.

11 ix. 3. ad princip.: cf. Eustath. ad Dionys. Perieg. 426.

12 Festus, xix. xx.

13 Amphitryon, Act. i. Scen. i.

14 Censorinus, De Die xxiv.

15 Varro, De Lingua Lat. v. 53 (cf. vi. 91).

an ἀστρολογία once existed, quoted both by Pliny[r] and by Athenæus[s], and by the scholia on Aratus[t]. Hesiod consequently was as likely as any of his contemporaries to take an interest in a discovery of this kind.

xi. The use of the gnomon or sun-dial, and the division of the day and the night into hours, according to Herodotus[v] were derived by the Greeks from the Babylonians; and the person who brought them into Greece is said to have been Anaximander of Miletus[x]: Εὗρε δὲ καὶ γνώμονα πρῶτος καὶ ἔστησεν ἐπὶ τῶν σκιοθήρων ἐν Λακεδαίμονι, καθά φησι Φαβωρῖνος

in summo habet diffusum lumen, ut leo in capite jubam. hujus ortus significat circiter esse extremam noctem[16]—Apud Plautum,

Neque jugula neque vesperugo neque vergiliæ occidunt.

. . . . vesperugo stella quæ vespere oritur, a quo etiam Opilius scribit vesperum. itaque dicitur

Alter vesper adest, quem dicunt Græci διέσπερον[17] (potius δειελέσπερον, or δειλέσπερον—late evening.)

It portis jubare exorto delecta juventus[18]—

Quare age, vel jubare exorto jam nocte suprema,
Vel cum Phœbus equos in gurgite mersat Hibero[19].

We shall conclude this note with the following extract from Augustin De Civitate[20]: Est in Marci Varronis libris, quorum inscriptio est de Gente Populi Romani, quod eisdem verbis quibus ibi legitur et hic ponam. In cœlo, inquit, mirabile exstitit portentum. nam in stella Veneris nobilissima, quam Plautus vesperuginem, Homerus Hesperon adpellat, pulcherrimam dicens, Castor scribit tantum portentum exstitisse ut mutaret colorem, magnitudinem, figuram, cursum. hoc factum Ogyge rege dicebant Adrastus Cyzicenus et Dion Neapolites, mathematici nobiles. If a phenomenon like this ever occurred, it was most probably a comet mistaken for the evening star. The learned Academician Fréret wrote a Dissertation on this passage; which the reader, who wishes to see it, will find in the Mémoires de l'Académie des Inscriptions.

[r] H. N. xviii. 57, 188.

[s] xi. 80.

[t] Ad Phœn. 254. The mention of this ἀστρολογία attributed to Hesiod induces us to observe, that the first work on astronomy among the Greeks in the common opinion having been rather a production ascribed to Thales of Miletus, if Hesiod was really the author of an ἀστρολογία too, he must have been younger than Thales. And so indeed he was, though not much younger.

[v] ii. 109. Cf. on this subject our Fasti Catholici, i. 284. *n.*

[x] Diogenes Laertius, Lib. ii. Cap. i. § iii. Cf. Suidas in Ἀναξίμανδρος, Γνώμων, Ἡλιοτρόπιον: Pliny, H. N. ii. 78: ii. 6: vii. 57: Euseb. Præp. Evangelica, x. xiv. 504 a.

[16] De Lin. L. vi. 95. [17] Ibid. vi. 91.

[18] Virgil. Æn. iv. 130. cf. Serv. in loc.: Vitruvius, ix. i. 263.

[19] Columella, De Hortor. Cultu. 294. Lib. x.

[20] xxi. 8. 336. 337.

ἐν παντοδαπῇ ἱστορίᾳ, τροπάς τε καὶ ἰσημερίας σημαίνοντα· καὶ ὡροσκόπια κατεσκεύασε. Anaximander having been a disciple of Thales, might be more or less a contemporary of Hesiod. Hippolytus[y] dates his time Ol xlii. 3. B.C. 610; which would make him about the same age as Hesiod. According to Apollodorus[z], he was 64 Ol. lviii. 2. B. C. 547–546, and died soon after. This too would suppose him to have been born B. C. 611. Pliny[a] dates the discovery of the obliquity by him Ol. lviii. itself, B. C. 548.

It may be remarked of the idiom of Homer, that ὥρη or ὥρα, in the sense of an "hour," does not occur in the Iliad or the Odyssey; nor any other term which would imply that any division of the parts of the day, but the most simple and obvious one of morning, noon, and evening, or of those of the night, but such as were marked by the changes in the places and appearances of the fixed stars, could yet have been in use in his time. With respect to this use of Ὥρα in the modern sense—(Ὥρα, τὸ δωδέκατον τῆς ἡμέρας[b])—Ulpian, surnamed Κειτούκειτος in Athenæus, is made to ask this question—Οἷον, εἰ κεῖται ὥρα ἐπὶ τοῦ τῆς ἡμέρας μορίου[c]—from which it may be justly inferred it was rare of occurrence in the classical authors: and Pollux also observes[d], Ὥρα δὲ καὶ ἡμιώριον, σημεῖον (ὡς Μένανδρος) ὠνομάζετο παρὰ τοῖς παλαιοῖς—which must imply that its use even then was not very common. Mr. Ideler, in his Technical Chronology, treating of the Greek calendar, supposes Hipparchus, (B. C. 140,) the first Greek writer in whom the word occurs in the sense of "hour;" yet he himself quotes the Memorabilia of Xenophon[e], and the De Legibus of Plato[f]; in the first of which the use of astronomy, as a means of teaching the *hours* (ὥρας) of the night, is alluded to*, in the other, the third part of an

* Οὐκοῦν καὶ ἐπειδὴ ὁ μὲν ἥλιος φωτεινὸς ὢν τάς τε ὥρας τῆς ἡμέρας ἡμῖν καὶ τἄλλα πάντα σαφηνίζει, ἡ δὲ νὺξ διὰ τὸ σκοτεινὴ εἶναι ἀσαφεστέρα ἐστὶν, ἄστρα ἐν τῇ νυκτὶ ἀνέφηναν (οἱ θεοὶ), ἃ ἡμῖν τὰς ὥρας τῆς νυκτὸς ἐμφανίζει.

[y] Philosophumena, ascribed to Origen, i. 12. 4.

[z] Apud Diog. Lib. ii. Cap. i. § iv.

[a] ii. 6. cf. vii. 57.

[b] Suidas, in voce, cf. Etym. M. ὥρα.

[c] i. 2.

[d] Lib. i. Cap. vii. § 71. pag. 47.

[e] iv. iii. 4.

[f] vi. 474. 3. = 784. 3.

hour * is mentioned : and in both, especially in the latter, the word is used in the proper sense of "hour."†

* Πρὸς τὸ τῆς Εἰλειθυίας ἱερὸν ἑκάστης ἡμέρας ξυλλεγόμεναι μέχρι τρίτου μέρους ὥρας.

† The following are examples of the use of this word in the classical Greek writers, from the time of Homer downwards—

i. *Ὄφρα Ποσειδάωνι καὶ ἄλλοις ἀθανάτοισι*
σπείσαντες κοίτοιο μεδώμεθα· τοῖο γὰρ ὥρη.

Od. Γ. 333.

Πρὶν γάρ κεν καὶ νὺξ φθεῖτ' ἄμβροτος. ἀλλὰ καὶ ὥρη
εὕδειν.

Ibid. Λ. 329.

Νὺξ δ' ἥδε μάλα μακρὴ ἀθέσφατος· οὐδέ πω ὥρη
εὕδειν ἐν μεγάρῳ.

Ibid. — 372.

Ὥρη μὲν πολέων μύθων ὥρη δὲ καὶ ὕπνου.

Ibid. — 378.

Νῦν δ' ὥρη δόρποιο.

Ibid. Ξ. 407.

Μνῆμ' Ἑλένης χειρῶν, πολυηράτου ἐς γάμου ὥρην.

Ibid. Ο. 126.

Οὐδέ τί σε χρὴ
πρὶν ὥρη καταλέχθαι.

Ibid. — 392.

Οὐ μὲν γάρ τι χέρειον ἐν ὥρῃ δεῖπνον ἑλέσθαι.

Ibid. Ρ. 176.

Καὶ γὰρ δὴ κοίτοιο τάχ' ἡδέος ἔσσεται ὥρη.

Ibid. Τ. 510.

Νῦν δ' ὥρη καὶ δόρπον Ἀχαιοῖσιν τετυκέσθαι.

Ibid. Φ. 428.

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ii. Plutarch, Lycurgus, vi. : *Διὸς Ἑλλανίου καὶ Ἀθηνᾶς Ἑλλανίας ἱερὸν ἱδρυσάμενον, φυλὰς φυλάξαντα, καὶ ὠβὰς ὠβάξαντα, τριάκοντα, γερουσίαν σὺν ἀρχαγέταις καταστήσαντα, ὥρας ἐξ ὥρας ἀπελλάζειν μεταξὺ Βαβύκας τε καὶ Κνακίωνος,* (cf. Pelopidas, xvii.) *οὕτως εἰσφέρειν τε καὶ ἀφίστασθαι· δάμῳ δ' ἀγορὰν εἶμεν καὶ κράτος.*

iii. *Εἴθ' οὕτως ἀνδρός τοι ἀλωμένου οὐδέμι' ὥρη*
γίγνεται.

Tyrtæus, i. 11.

iv. Δέδυκε μὲν ἁ σελάνα καὶ Πληϊάδες· μέσαι δὲ
νυκτές· παρὰ δ' ἔρχετ' ὥρα· ἐγὼ δὲ μόνα καθεύδω.
Sappho, Fragm. 32 Edit. Giles. cf. Hephæstion, De Metris, xi.

v. Ἧ τ' ἀροτοῖό τε σῆμα φέρει, καὶ χείματος ὥρην
δεικνύει ὀμβρηροῦ.
Hesiod, Opp. et Dies, 448.

Αὔην καὶ διερὴν ἀρόων ἀροτοῖο καθ' ὥρην.
Ibid. 458.

Πὰρ δ' ἴθι χάλκειον θῶκον καὶ ἐπαλέα λέσχην
ὥρῃ χειμερίῃ.
Ibid. 491.

Ὥρῃ ἐν ἀμήτου, ὅτε τ' ἠέλιος χρόα κάρφει.
Ibid. 573.

vi. Ἐμοὶ δ' ἔρως
οὐδεμίαν κατάκοιτος ὥραν.
Ibycus Fragm. I. cf. Schol. in Platon. ii. 329, In Parmenidem, 24. 1.

vii. Ὥρα δ' ἐμπόρους μεθιέναι
ἄγκυραν ἐν δόμοισι πανδόκοις ξένων.
Æschylus, Choëphori, 661.

Ἔθυον, ὥραν οὐδενὸς κοινὴν θεῶν.
Eumenides, 109.

viii. Ὅταν δέ κε τῶν ἀφίκηται
ὥρη, σὺν δ' ἥβη γίγνεται ἁρμόδιος.
Theognis, 724.

ix. Μεσονυκτίοις ποθ' ὥραις,
στρέφεται ὅτ' Ἄρκτος ἤδη
κατὰ χεῖρα τὴν Βοώτου.
Anacreon. Γ. εἰς Ἔρωτα.

x. Ὁ δ' Ἐμπεδοκλῆς ἐν ἀρχῇ τῆς φιλοσοφίας προαναφωνήσας·
Ἔστι τ' ἀνάγκης χρῆμα θεῶν, ψήφισμα παλαιὸν,
εὖτέ τις ἀμπλακίῃσι φόνῳ φίλα γυῖα μιήνῃ, κ', τ. λ.
τρὶς μὲν μυρίας ὥρας ἀπὸ μακάρων ἀλάλησθαι.
Plutarch, De Exsilio, xviii.

xi. Οἷά τε φῶτες
φιληταὶ διέπουσι μελαίνης νυκτὸς ἐν ὥρῃ.
Hymnus ad Ἑρμῆν, 66.

Τίπτε σὺ, ποικιλομῆτα, πόθεν τάδε νυκτὸς ἐν ὥρῃ—
Ibid. 155. cf. 400.

xii. Συμμετρησάμενοι τὴν ὥρην τῆς ἡμέρης, νυκτὸς παρεξῆγον.
Herod. iv. 158.

If however the division of day and night into hours was brought into Greece by Anaximander (who, as we have seen, must have been a contemporary of Hesiod's), it might be known to him; in which case his use of the word *ὥρα* might be expected *a priori* to be modified accordingly. There are four instances of its occurrence in his works; of each of which it would be hazardous to pronounce with confidence that it could not have been intended to have this proper and special sense of *hour*.

The first is, Opp. et Dies, 30—

> *Ὥρη γάρ τ' ὀλίγη πέλεται νεικέων τ' ἀγορέων τε*
> *ᾧ τινι μὴ βίος ἔνδον ἐπηετανὸς κατάκειται.*

It may indeed have the meaning here of 'care for,' 'regard for,' 'concern for;' but the sense of, 'leisure for,' 'time for,' 'an hour for,' suits the context much better.

The second is, Opp. et Dies, 406—

> *Μὴ σὺ μὲν αἰτῇς ἄλλον, ὁ δ' ἀρνῆται, σὺ δὲ τητᾷ,*
> *ἡ δ' ὥρη παραμείβηται, μινύθῃ δέ τοι ἔργον.*

And here the meaning is more dubious; whether that of 'season,' generally, or the 'proper time,' 'the hour,' for such and such purposes, in particular. The latter gives more force and emphasis to the admonition.

The third is Aspis, 401, describing the time of the encounter between Kycnus and Hercules, by such and such tokens; the cicada's beginning to sing—Sirius' being the most scorching; the lentil, recently sown, now in the pod; the grape, before green, now beginning to turn: all signs of midsummer.

> *Τὴν ὥρην μάρναντο, πολὺς δ' ὀρυμαγδὸς ὀρώρει.*

The selfsame hour? or the selfsame season? the latter of which would be vague and indefinite; the former only would mark the time with the precision which must have been intended by the enumeration of so many criterions of it.

xiii. *Κρατῖνος, Ὥραις·*

> *ὥσπερ ὁ Περσικὸς, ὥραν πᾶσαν καναχῶν, ὀλόφωνος ἀλέκτωρ.*
> Athen. ix. 16.

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xiv. *Ἀλλὰ τρόχαζε·*

> *ὥρας γὰρ πέμπτης πάντες ἀθροιζόμεθα.*
> Anthologia, ii. 49. Posidippus, xii.

The fourth occurs Theogonia, 750, describing the alternate succession of Night and Day, one to the other, in the occupation of the same house or abode, which they could never both be occupying at once—

> Ἡ μὲν ἔσω καταβήσεται, ἡ δὲ θύραζεν
> ἔρχεται, οὐδέ ποτ' ἀμφοτέρας δόμος ἐντὸς ἐέργει·
> ἀλλ' αἰεὶ ἑτέρη γε δόμων ἔκτοσθεν ἐοῦσα
> γαῖαν ἐπιστρέφεται· ἡ δ' αὖ δόμου ἐντὸς ἐοῦσα
> μίμνει τὴν αὐτῆς ὥρην ὁδοῦ ἔστ' ἂν ἵκηται.

And here the word seems to have clearly the specific sense of *hour*. For night succeeds to day and day to night—not at a stated *season*, but a stated *point of time*, or *hour*; which, according to the common division of noctidiurnal time into ὧραι καιρικαὶ, was πρωῒ, early, and ὀψὲ, late, respectively; the former the point of the first hour of day, the latter, that of the first of night.

xii. Again, the invention of the Μῦθος, Apologue or Fable, (especially as applied to moral, didactic, and practical purposes,) is ascribed by the ancients to Æsop. Yet a fable occurs in Hesiod[g]: two at least are found among the remains of Archilochus[h]: something of the same kind occurs in Theognis[i]: and a fable, as strictly so to be called as any in Æsop, and both imagined and applied at the time for a practical purpose, is attributed to Stesichorus of Himera in Sicily[k]. Among these names, Archilochus was probably older than Hesiod; but Stesichorus, who passed in the opinion of some of the ancients for his son, scarcely could have been so: and both he and Theognis and Hesiod may be assumed to have been more or less contemporaries.

If then not only the idea, but an actual example, of the Æsopean fable itself was found in Hesiod, Archilochus, and Stesichorus, how has it happened that the invention of the fable is almost unanimously ascribed to Æsop[l]? and why should not Quinctilian be more in the right, who, from the

[g] Opera et Dies, 200–210.

[h] Fragmenta, xxxviii. xxxix.

[i] 345–350: 601, 602.

[k] Aristot. Rhetorica, ii. xx. 5. Photii Bibl. Cod. 186. p. 139. l. 7: Conon, Διηγήσεις, xlii.

[l] Cf. Antholog. iv. 16. Agathias, xxxv. We say almost unanimously: for there are exceptions. Isidore, Origg. i. 39. 12 G, attributes it to Alcmæon of Croton, older than Æsop. The Scholiast on Aristophanes too, ad Aves, 652. (cf. ad 471. 969.) claims the authorship of the fable, there ascribed to Æsop, for Archilochus, whom he makes older than Æsop.

occurrence of a fable in Hesiod (which, on the common hypothesis of his age, must have been much the oldest specimen of its kind), assigns it to Hesiod not to Æsop[m]? Nor indeed, on the hypothesis in question, could any fable, of equal much less of superior antiquity to this of Hesiod's, be discovered except in the Bible; in which two fables occur older than this[n]. But the truth is, if we may assume Suidas' date of the acme of Æsop, Olymp. xl. B. C. 620, he must have been older than Hesiod; and possibly as old as Archilochus: so that however speedily the idea of the fable, once introduced by him, might have been caught up and imitated by any of his contemporaries, the ancients might always have had good reason for attributing its invention to Æsop. It is observable that both Archilochus and Hesiod call the fable not Μῦθος but Αἶνος; and that was probably the name under which it first appeared—as the most expressive of its nature, (a *fabula*, *tale*, or *story* of a certain kind,) which could have been given it.

xiii. These different arguments of the age of Hesiod converge on one conclusion; viz. that his true time could not have been earlier than the end of the seventh century before the vulgar æra. Whether he must not have lived still later, may yet be considered an open question. We shall produce an argument, last of all, the tendency of which is to prove that he must have been writing after B. C. 606 at least.

A reference to something in one of his lost works appears in Aristotle, De Animalibus[o], which seems to have escaped his editors; none of them having given it a place among his Fragments, or other allusions to his works, which they have collected*. Aristotle was speaking of one of the habits of birds of prey (*γαμψώνυχα*), that of never drinking: Τὰ *μὲν οὖν γαμψώνυχα*, says he[o], *καθάπερ εἴρηται πρότερον*[p], *ὡς ἁπλῶς*

* Probably the reason of the omission has been that heretofore the name of Herodotus appeared in the text of Aristotle instead of that of Hesiod: cf. Fabricius, Bibliotheca Gr. lib. ii. xx. 5. pag. 699. The true reading of Ἡσίοδος however has been restored by Mr. Bekker.

[m] Institutiones, v. xi. 19. Cf. our Exposition of the Parables, Appendix, chap. ii. vol. v. Part ii. 8.

[n] Cf. our Exposition of the Parables, vol. v. Part ii. p. 14.

[o] Lib. viii. 18. pag. 238. 12.

[p] Scilicet, viii. 3. ad fin. Οἱ δὲ γαμψώνυχες καὶ ἄποτοι πάμπαν κ', τ. λ.

εἰπεῖν ἄποτα πάμπαν ἐστίν· (ἀλλ' Ἡσίοδος ἠγνόει τοῦτο· πεποίηκε γὰρ τὸν τῆς μαντείας πρόεδρον ἀετὸν ἐν τῇ διηγήσει τῇ περὶ τὴν πολιορκίαν τὴν Νίνου *πίνοντα.)*

Aristotle then was aware of some production of Hesiod's (no doubt in verse) which either bore the title of *πολιορκία* Νίνου, *siege of Ninus*, or contained a *Διήγησις*, a narrative, of that event. And though no reference to any such poem occurs elsewhere, it cannot be doubted that it must once have existed, if it was known to Aristotle; nor even that it may be rightly assigned to Hesiod, if *he* recognises it as genuine.

What siege of Ninus then was this? There are only two, in the history of the ancient Ninus; one of them, that which we may have occasion to consider more circumstantially, if we are permitted to treat of the Babylonian calendar, but of which it is sufficient at present to say, that it was not a siege properly so called; having lasted only a few days, during which one or two battles were fought under the walls of Ninus, but Ninus itself could not be said to have been reduced to a state of siege. The sceptre was wrested on this occasion from the last of the Assyrian kings of the earlier dynasty, Thonas Concolerus, the first Sardanapalus: but Nineveh was not destroyed, nor was the empire dissolved, nor the seat of government transferred elsewhere. A second dynasty took its rise from the date of this siege—if siege it must be called: better known in history than the first; of which Arbaces was the first. But this too continued to reign at Nineveh; and the kings of Nineveh, the Assyrian kings, properly so called, whose names appear in Scripture (Pul, Tiglath-Pileser, Shalmanezar, Sennacherib, Esar-Haddon) belonged to this line: the first and oldest of them, as we hope to prove, or to render in the highest degree probable, by the comparison of the chronology of this second empire with that of Scripture, being Arbaces.

The second occasion was a very different one from this first. That was a siege of Nineveh, a *πολιορκία Νίνου*, in the strictest sense of the phrase; one of the most remarkable in ancient history, first for its duration (having lasted nearly

Suidas has a quotation from George of Pisidia illustrating this supposed property of the eagle, as not subject to thirst, nor consequently ever drinking. The same thing is asserted by Ælian; De Nat. Anim. ii. 26: *Οὐδέποτε αἰετὸς οὔτε πηγῆς δεῖται κ', τ. λ.*—ii. 43: *Ἔστι φῦλον ἱεράκων . . . . καὶ ποτοῦ δέεται οὐδέν*—iv. 20: *Γαμψώνυχον δὲ ἄρα οὐδὲ ἓν οὔτε πίνει οὔτε οὐρεῖ κ', τ. λ.*

three years), secondly for its consequences—ending not only in the capture, but in the destruction of the captured city; and along with it, the dissolution of the first of the great empires of the world, which from this time forward was superseded by the second—the Babylonian. On every account this must have been the siege of Ninus which constituted the subject of the *Διήγησις*, referred to by Aristotle; the poetical narration of such an event in some one of the lost works of Hesiod.

Now this siege of Nineveh was that which was laid to it by Nebuchadnezzar and Astyages; the beginning of which is to be dated B. C. 609, the end B. C. 606: from which date also the reign of Nebuchadnezzar himself, and the Babylonion empire (the subject of the prophecies of Scripture), both took their rise. We cannot enter on the proof of these assertions here. Something may be said of them hereafter; and something has been said about them in our former works; to which we refer the reader[q].

The true date of this final catastrophe of Ninus being thus determined to B. C. 606; the age of Hesiod is so far determined also, that if he knew of this event, and wrote an account of it, he must have been both living and writing later than B. C. 606. And this conclusion is of great importance, not only as confirming every thing which has already been urged to the same effect, but as enabling us to circumscribe still further the various testimonies to his age, *ab extra*, between which we should have to decide. For if this conclusion be admitted, none of them, which would make him older than B. C. 606, will be entitled to consideration; and that will dispose of the greater part of them at once.

Section V.—*On the testimony of Hesiod to the state of the Calendar and the beginning of the year in his own time.*

We shall now proceed to consider the actual testimony to the nature of the calendar and to the state of the civil year of his own time, which occurs in Hesiod himself: but we shall take the liberty of understanding by his time the date

[q] Dissertations on the Principles and Arrangements of an Harmony of the Gospels, vol. iii. 518–527. Appendix, Dissert. xii.

of his Works and Days. The first conclusion, which admits of being established, is *this*: That in his time the beginning of the year and the first month of the calendar must have been falling in close contiguity to the winter solstice; but *after* it, not *before* it. In order to lay the grounds of this inference clearly before the reader, it is necessary to quote the following from the Works and Days[r]:

Μῆνα δὲ Ληναιῶνα, κάκ' ἤματα βούδορα πάντα,
τοῦτον ἀλεύασθαι, καὶ πηγάδας αἵ τ' ἐπὶ γαῖαν
πνεύσαντος βορέαο δυσηλεγέες τελέθουσιν·
ὅς τε διὰ Θρήκης ἱπποτρόφου εὐρέϊ πόντῳ
ἐμπνεύσας ὤρινε· μέμυκε δὲ γαῖα καὶ ὕλη·
πολλὰς δὲ δρῦς ὑψικόμους ἐλάτας τε παχείας
οὔρεος ἐν βήσσῃς πιλνᾷ χθονὶ πουλυβοτείρῃ
ἐμπίπτων· καὶ πᾶσα βοᾷ τότε νήριτος ὕλη.
θῆρες δὲ φρίσσουσ', οὐρὰς δ' ὑπὸ μέζε' ἔθεντο,
τῶν καὶ λάχνῃ δέρμα κατάσκιον· ἀλλά νυ καὶ τῶν
ψυχρὸς ἐὼν διάησι, δασυστέρνων περ ἐόντων.
καί τε διὰ ῥινοῦ βοὸς ἔρχεται, οὐδέ μιν ἴσχει·
καί τε δι' αἶγα ἄησι τανύτριχα· πώεα δ' οὔ τι,
οὕνεκ' ἐπηεταναὶ τρίχες αὐτῶν, οὐ διάησιν
ἲς ἀνέμου βορέου· τροχαλὸν δὲ γέροντα τίθησι.
καὶ διὰ παρθενικῆς ἁπαλόχροος οὐ διάησιν,
ἥ τε δόμων ἔντοσθε φίλῃ παρὰ μητέρι μίμνει,
οὔπω ἔργ' εἰδυῖα πολυχρύσου Ἀφροδίτης·
εὖτε λοεσσαμένη τέρενα χρόα, καὶ λίπ' ἐλαίῳ
χρισαμένη, νυχίη καταλέξεται ἔνδοθεν οἴκου,
ἤματι χειμερίῳ, ὅτ' ἀνόστεος ὃν πόδα τένδει,
ἔν τ' ἀπύρῳ οἴκῳ, καὶ ἐν ἤθεσι λευγαλέοισιν.
οὐ γάρ οἱ ἠέλιος δείκνυ νομὸν ὁρμηθῆναι·
ἀλλ' ἐπὶ κυανέων ἀνδρῶν δῆμόν τε πόλιν τε
στρωφᾶται, βράδιον δὲ Πανελλήνεσσι φαείνει.
καὶ τότε δὴ κεραοὶ καὶ νήκεροι ὑληκοῖται
λυγρὸν μυλιόωντες ἀνὰ δρία βησσήεντα
φεύγουσιν· καὶ πᾶσιν ἐνὶ φρεσὶ τοῦτο μέμηλεν,
οἳ σκέπα μαιόμενοι πυκινοὺς κευθμῶνας ἔχουσι,
καὶ γλάφυ πετρῆεν· τότε δὴ τρίποδι βροτῷ ἶσοι,
οὗ τ' ἐπὶ νῶτα ἔαγε, κάρη δ' εἰς οὖδας ὁρᾶται,
τῷ ἴκελοι φοιτῶσιν, ἀλευόμενοι νίφα λευκήν.
Καὶ τότε ἕσσασθαι ἔρυμα χροὸς, ὥς σε κελεύω,
χλαῖναν μὲν μαλακὴν καὶ τερμιόεντα χιτῶνα·
στήμονι δ' ἐν παύρῳ πολλὴν κρόκα μηρύσασθαι·
τὴν περιέσσασθαι, ἵνα τοι τρίχες ἀτρεμέωσι,
μηδ' ὀρθαὶ φρίσσωσιν, ἀειρόμεναι κατὰ σῶμα.
ἀμφὶ δὲ ποσσὶ πέδιλα βοὸς ἶφι κταμένοιο

r 502. sqq.

ἄρμενα δήσασθαι, πίλοις ἔντοσθε πυκάσσας.
πρωτογόνων δ' ἐρίφων, ὁπόταν κρύος ὥριον ἔλθῃ,
δέρματα συρράπτειν νεύρῳ βοὸς, ὄφρ' ἐπὶ νώτῳ
ὑετοῦ ἀμφιβάλῃ ἀλέην· κεφαλῆφι δ' ὕπερθεν
πῖλον ἔχειν ἀσκητὸν, ἵν' οὔατα μὴ καταδεύῃ·
ψυχρὴ γάρ τ' ἠὼς πέλεται βορέαο πεσόντος. κ',τ.λ.
Τὸν φθαμένος, ἔργον τελέσας, οἶκόνδε νέεσθαι,
μήποτέ σ' οὐρανόθεν σκοτόεν νέφος ἀμφικαλύψῃ,
χρῶτά τε μυδαλέον θείῃ, κατὰ θ' εἵματα δεύσῃ·
ἀλλ' ὑπαλεύασθαι. Μεὶς γὰρ χαλεπώτατος οὗτος
χειμέριος, χαλεπὸς προβάτοις, χαλεπὸς δ' ἀνθρώποις.
τῆμος θὤμισυ βουσ' ἐπὶ δ' ἀνέρι καὶ πλέον εἴη
ἁρμαλιῆς· μακραὶ γὰρ ἐπίρροθοι εὐφρόναι εἰσί.

The whole of this is the description of *one* month; first mentioned at the beginning, and again in the fourth line from the end—Μεὶς *γὰρ κ',τ.λ*, and again (as we construe that reference) in the third line before it, Τὸν *φθαμένος, κ',τ.λ.* In the first of these instances it is alluded to under a proper name, Ληναιὼν or Lenæon. The etymon of this name the ancients appear to have been much at a loss to explain; but with respect to the month so called and its relation to the tropical year, they all collected from the accompanying description that it must have coincided with the depth of winter. Ὅτι δὲ ὁ σφοδρὸς χειμὼν ἀναπαύει ἔργων ἀνθρώπους δηλοῖ καὶ Ἡσίοδος, ὃς καὶ ὁρίζει καιρὸν τῇ τοιαύτῃ ἀναπαύσει, ὅτε ὁ Ληναιὼν ἐνίσταται μήν[t]. And again, Ὧν καθ' Ἡσίοδον οὐδὲ τὸ κατὰ Ληναιῶνα ψύχος καθικνεῖται[v]. Tzetzes adduces a similar description of Orpheus', as he supposes; which was obviously intended of the same season, and of the same month relatively to it: and was probably written by some one, under the name of Orpheus, in imitation of this of Hesiod's.

Πολλαὶ δ' οὐρανόθεν καὶ ἐπάρτεες ἐκ νεφελάων
τῆμος ἐπόρνυνται φηγοῖς καὶ δένδρεσιν ἄλλοις
οὔρεσί τε σκοπέλοις τε καὶ ἀνθρώπων ἐριθύμοις
πηγυλίδες, καὶ ἔσονται ἀμείδεες· αἱ δὲ γὰρ ὄντως
τρύζουσιν καὶ θῆρας ἐν οὔρεσιν, οὐδέ τις ἀνδρῶν
προβλώσκειν μεγάρων δύναται, κατὰ γαῖα δαμασθεὶς
ψύχεϊ λευγαλέῳ· πάχνῃ δ' ὑπὸ γαῖα μέμυκε.

And indeed it is scarcely possible to read the preceding description and not imagine one was reading the account of an Arctic rather than a Grecian winter. We have *rain* and

[t] Eustathius, ad Il. P. 549: 1117. 56.   [v] Ad Dionys. Per. 666.

snow, *cold* and *frost*, sharp biting *winds* from the *north*; we have the distress of animals, both wild and tame, wheresoever exposed to the weather; and its effects on men too, both old and young—all minutely and graphically described. We have every precaution which human ingenuity could think of devising, in the shape of clothing, as a means of protection. Such characters could have belonged to none but a winter month; and we may add, to none but the most winterly.

Now the most winterly month in all climates is not that which immediately precedes, but that which immediately follows, the winter solstice. And that would be especially true of those climates, in which the winter began late, and the spring early: as for example that of Greece, in which the proper beginning of winter was not more than a month before the solstice, and the proper beginning of spring not more than a month after it. To judge therefore of the site of the Lenæon of Hesiod, from his description of it, in general, we could not but conclude that, if it did not precede the winter solstice, it must either have coincided with it, or followed it, only within certain limits. There are some circumstances of the description however, which tend more directly to the discovery of the true relation of the whole to the natural year, than the rest.

i. It appears from the 541st verse, that this was the month in which the cold season as such might be expected to set in; against the arrival of which, Hesiod recommends the provision of shoes, made of the untanned or undressed skins of kids, and consequently allowing the hair or nap to be retained inside—no doubt the more effectually to warm the feet. The significant circumstance of these allusions is the

Ὁππόταν κρύος ὥριον ἔλθῃ—

meaning that what he was going to advise should be done as soon as the cold weather set in, as it might be expected to do, in this month. This month then was the beginning of cold weather: the month which ushered in the cold season.

ii. Among the natural characters of the month, the allusion to the Polypus [x], and to its being confined to its hole during it, is as significant as any. It is agreed that under this name of the *ἀνόστεος* or *boneless one* the polypus was in-

[x] v. 522. cf. Etym. M. ἀνόστεος.

tended. Lenæon then was the month, or one of the months, in which the polypus was known to be dormant. Now Aristotle observes of the habits of this fish[y]; Ὁ δὲ πολύπους ὀχεύεται τοῦ χειμῶνος, (τίκτει δὲ τοῦ ἔαρος,) ὅτε καὶ φωλεύει περὶ δύο μῆνας. The Lenæon of Hesiod consequently was one of these two months. Spring, in this work of Aristotle's, (and especially in such allusions to the habits of fish as these,) is to be understood of a much earlier point in the natural year than the vernal equinox: and the termination of his winter of a proportionably earlier one also. Posideon in the Attic calendar was reckoned by him one of his winter months; and we have seen[z] that the first or the second always coincided with the winter solstice: and it is very observable that, as Hesiod, among other indications of the sympathy of animals with the weather in his Lenæon, insisted on this circumstance more particularly—

Θῆρες δὲ φρίσσουσ', οὐρὰς δ' ὑπὸ μέζε' ἔθεντο—

so, as we learn from the commentary of Proclus on the place, was the same circumstance alluded to in a fragment of Callimachus', as descriptive of the month Posideon. For though this fragment in its present state is corrupt, yet that such was its meaning there can be no doubt; nor would Proclus, who read it as it came from its author, have thought of quoting it, except as parallel to this part of Hesiod's description: Ὡς καὶ παρὰ Καλλιμάχῳ—

Ἕζεσθαι θερμότατον ῥιζοῦχε Ποσειδῶν.

where ῥιζοῦχε at least is to be corrected by μεζοῦχε.

[y] De Anim. v. 12. 122. 29. Cf. Athenæus, vii. 104. where the same, or a similar quotation, is given from the De Partibus Animalium: Ἐν δὲ πέμπτῳ Μορίων φησὶν Ἀριστοτέλης· Πουλύπους ὀχεύει τοῦ χειμῶνος, καὶ τίκτει τῷ ἔαρι. φωλεύει δὲ περὶ δύο μῆνας—

Χείματι δ' οὔ ποτε φασὶν ἐπιστείχειν ἁλὸς ὕδωρ
πουλύποδας· ζαμενεῖς γὰρ ὑποτρομέουσι θυέλλας·
ἀλλ' οἵ γε γλαφυρῇσιν ἐνεζόμενοι θαλαμῇσι
πτήξαντες δαίνυνται ἑοὺς πόδας, ἠΰτε σάρκας
ἀλλοτρίας, οἱ δ' αὖτις ἑοὺς κορέσαντες ἄνακτας
φύονται· τόδε πού σφι Ποσειδάων ἐπένευσε.
τοῖον καὶ βλοσυρῇσιν ὀρειμάργοισι νόημα
ἄρκτοις· χειμερίην γὰρ ἀλυσκάζουσαι ὁμοκλήν,
δῦσαι φωλειοῖο μυχὸν κάτα πετρήεντα,
ὃν πόδα λικμάζουσιν, ἐδητύος ἔργον ἄπαστον,
μαιόμεναι δαίτην ἀνεμώλιον, οὐδ' ἐθέλουσιν
προβλώσκειν εὐκραὲς ἕως ἔαρ ἡβήσειεν.

Oppian, Halieutica, ii. 241. cf Kynegetica, iii. 170–182: Antigon. Carystius, Ἱστοριῶν παραδόξων συναγωγή, Cap. xxv.

[z] Supra, 124.

iii. It appears from the sequel of this allusion to the polypus[a], that the sun, at the same time, was vertical in India or Æthiopia; while for all parts of Greece it shone only for a short time. This is a clear description of the solstitial month, both for the climate of Greece, and for that of its antipodes. It appears too from the last two lines of the quotation[b], that the nights at the same season of the year were much longer than the days; on which distinction the œconomical precept of diminishing the daily allowance of food to the cattle by one half, and that of men, or servants, by something less than one half, is founded. For Hesiod was too acute an observer not to have perceived that sleep, in the long winter nights, both in the case of animals and of men, was to a certain extent a substitute for food; and too good a manager, not to recommend advantage to be taken of that circumstance, at the proper season of the year.

It is evident then that the month here called Lenæon, when this name was applied to it by Hesiod, and in particular when he was making it the subject of such a description as this, must have been falling at or near to the winter solstice. The only further question is, Whether we are justified in inferring from the same description that the month so described was the first in the year, in the time of Hesiod, or not?

Hesiod having been a native of Ascra, our first and most natural impression would be that the calendar of Hesiod was that of Ascra; and Ascra itself having been part of Bœotia, it would be equally natural to suppose that the calendar of Ascra was that of Bœotia. With respect however to this prejudication of the question on such grounds as these, it is sufficient to appeal to the testimony of Plutarch; who being a Bœotian himself could not have been ignorant of a month called Lenæon, in the calendar of his own country, if any such made part of it. And though no such testimony is found in any of *his* remains at present; it must have occurred in his commentary on Hesiod, from which Proclus has transferred many particulars to his own; and among others, this testimony: Πλούταρχος οὐδένα φησὶ μῆνα Ληναιῶνα καλεῖσθαι παρὰ Βοιωτοῖς· ὑποπτεύει δὲ ἢ τὸν Βούκαιρον αὐτὸν λέγειν, ὅς

[a] v. 524–526. [b] v. 556, 557. cf. 553.

ἐστιν ἡλίου τὸν αἰγόκερων διϊόντος, καὶ τοῦ Βούδορα τῷ Βουκέρῳ συνᾴδοντος, διὰ τὸ πλείστους ἐν αὐτῷ διαφθείρεσθαι βόας· ἢ τὸν Ἑρμαῖον, ὅς ἐστι μετὰ τὸν Βούδορα, καὶ εἰς ταὐτὸν ἐρχόμενος τῷ Γαμηλιῶνι, καθ' ὃν καὶ τὰ Ληναῖα παρ' Ἀθηναίοις. Ἴωνες δὲ τοῦτον οὐδ' ἄλλως, ἀλλὰ Ληναιῶνα καλοῦσιν.

It seems then that Plutarch neither knew of any Lenæon in the calendar of his own time, nor had heard of any such before it. His testimony however, as here reported by Proclus, labours under some corruption; especially in what concerns the name of the month which in his opinion most probably corresponded to this of Hesiod; for that was not *Βούκαιρος*, or *Βούκερος*, much less *Βούδορος*, as it might be supposed from this account, but *Βουκάτιος*, as he himself informs us in his Life of Pelopidas[c]. This testimony of Plutarch's is quoted by Hesychius also, more briefly indeed, but more correctly: *Ληναιών· μήν. οὐδένα τῶν μηνῶν Βοιωτοὶ οὕτω καλοῦσιν· εἰκάζει δὲ ὁ Πλούταρχος Βουκάτιον· καὶ γὰρ ψυχρός ἐστιν. ἔνιοι δὲ τὸν Ἑρμαῖον, ὅς κατὰ τὸν Βουκάτιόν ἐστιν. καὶ γὰρ Ἀθηναῖοι τὴν τῶν Ληναίων ἑορτὴν ἐν αὐτῷ ἄγουσιν.*

The month Lenæon then was unknown in the Bœotian calendar. We may add that, as far as we have discovered, it was equally so in any other of the calendars of Græcia Proper. We have met with it only in the Ionic calendar, and in the Neapolitan. And lest any one should suppose that, as Hesiod's family came originally from Asia Minor, he probably took this name from the Ionic calendar of the time being (which in fact was the same with the Attic); it may be observed first, that his family came from Cuma in Æolia, not from any part of Ionia; secondly, that he himself was born and bred at Ascra, and was to all intents and purposes a Bœotian, and therefore could have had no particular predilection for the Ionic calendar. Lastly, that the Ionic Lenæon corresponded to the Attic Anthesterion, as we hope to see hereafter; and therefore could not have been the same with the Lenæon of Hesiod, unless the Attic Anthesterion was so too.

We must not therefore suffer our judgment on the present question to be influenced by the mere similarity of names; but look at the natural characters, or other circumstantial criteria, of the month itself, defined in the contemporary de-

[c] xxv. cf. xxiv.

scription of Hesiod. And these, as we have seen, determine its site in the natural year next after the winter solstice. When then we take into account the fact that, before the introduction of the respective lunar corrections of the different Greek communities, the months of the Primitive solar calendar had no proper names[d]; and further, that the lunar correction of this Primitive solar calendar ultimately adopted in Bœotia, when Hesiod was writing his Works and Days, possibly had not yet taken place; every one will admit that Hesiod might, if he pleased, give this name of Lenæon to the first month of the Primitive solar calendar. Or if the lunar correction of the Primitive solar calendar was in use in any other part of Greece, though not yet in Bœotia, he might give this name, if he thought proper, to the first month of *that*; particularly if this calendar was that which from the special reasons of the case he himself had followed, and was still proposing to follow, in his Works and Days. And probably this was the real state of the case. For there was such a calendar at this very time, of which Hesiod could not have been ignorant—the lunar correction of Solon, the Attic calendar as such. The Works and Days required a fixed calendar. Its rules and directions could not be of perpetual application themselves, and yet adapted to a shifting and variable calendar, like that of the Primitive equable year.

In our opinion therefore, the true explanation of the name is, that Hesiod purposely gave it to the Attic Gamelion—that his Lenæon was the same with the Attic Gamelion. If so, it could not fail to be the month next after the winter solstice, and the most winterly month in the year; for the Attic Gamelion was so too. Neither, on the same supposition, could it fail to have corresponded to the Bœotian Bucatius, from the time when that came into being at least; for the Attic Gamelion did so likewise *.

* The name of *Ληναιὼν* might have been given, for various reasons, to a month, which occupied this site in the natural year, (next after the winter solstice). But, in our opinion, the reason assigned for it by Proclus is the most probable, at least in this present instance: Ad Opp. 502: *Ληναιὼν δὲ εἴρηται διὰ τὸ τοὺς οἴνους ἐν αὐτῷ εἰσκομίζεσθαι· οὗτος δὲ ὁ μὴν ἀρχὴ χειμῶνός ἐστιν.* The wine of the last year's vintage was brought

[d] Page 84 sqq.

The particular proofs of this correspondence between the Attic calendar of Solon and that of the Works and Days will be produced by and by. At present, assuming only that there could not as yet have been any material difference between the lunar Gamelion of Solon and the solar Gamelion of the primitive year, and that the Lenæon of Hesiod, in whatsoever degree it corresponded to the former, in the same it must have corresponded to the latter also; let us see how that will apply to the question of the age of Hesiod himself.

home, and laid up in store against the winter, either just before or in this month. There was a direction in Cato, De Re Rustica, which we had occasion to consider in our Origines Kalendariæ Italicæ, (iii. 194, 195,) in illustration of the state of the Irregular Roman Calendar B. C. 154: and this was to the effect that the wine made and sold, on the spot, from the vintage of the season, Ex a. d. Kal. Octobres, should be carried away from the premises by the Kal. of January next ensuing: and the rationale of such a rule, in such a case, would be as applicable to the climate of Greece, as to that of Italy. Hesiod's vintage season, as we shall see, began on the 16th of September, and ended on the first of October; and the first of his Lenæon, B. C. 569, falling Jan. 1—it would be just as fitting that the new wine should be brought home and laid up by the first of his Lenæon, as by the Kalends of January of Cato. Nor must this preliminary process, with respect to the new wine of the year, be confounded with another, which had a stated time in the calendar also, and constituted the ceremony of the *Πιθοίγια*, the opening or broaching of the new wine, for the purpose of tasting it, *after* not *before* the winter; the date of which in the Attic calendar was the 11th of Anthesterion, and in the Bœotian was the 6th of Prostaterius, the month next to Anthesterion. On this subject also cf. our Origines Kalendariæ Italicæ, i. 295, 296.

The above explanation of Proclus appears in the Etym. Magnum, *Ληναιὼν*, also, (cf. the Notes, ed. Gaisford,) and in the Scholia of Tzetzes on the place; both concurring to understand the month in question, as the same with the Egyptian Chœac, (the limits of which in the Alexandrine calendar in the leap years of the cycle were Nov. 28—Dec. 28, in the common years, Nov. 27—Dec. 27)—but both falling into the absurdity of supposing that it took its name from the *Λήναια*, as the same with the Ambrosia or Brumalia of the Roman calendar of later times, the date of which was Nov. 24. Cf. the Constantian Calendar, Uranologium, 117, and the Geoponica, i. 1. p. 4; 5. p. 8. It is very possible that the period, within which the new wine was ordinarily brought home and stored in Italy, might be comprehended by Nov. 24 and Dec. 24, (about a month after the end of the vintage every where,) at least in later times; though we meet with no such name or date, as this of the Ambrosia or the Brumalia, in the Calendar of earlier times.

i. Let us suppose Hesiod, according to one class of testimonies, as old as Homer; and let us take the lowest date of the age of Homer, *circa* B. C. 884. The mean vernal equinox at that time was falling on March 31; and the solar Gamelion of the same epoch, on March 30: and consequently, if Hesiod was writing his Works and Days at this time, the first of his Lenæon was falling on or about March 30: that is, the most winterly of the months, in the calendar of his time, was falling on or about the vernal equinox.

ii. Let us assume the most commonly received date of the age of Hesiod, *circa* B. C. 800. The mean vernal equinox then too was still falling on March 31, and the primitive Gamelion of that epoch not earlier than March 10: and if Hesiod was writing at this time, the most winterly month in his calendar must still have been falling within 21 days of the equinox of spring.

iii. If however we suppose him not to have been writing before B. C. 606—though the mean vernal equinox was then also falling on March 30, the primitive solar Gamelion was not falling later than January 23; within less than a month of the mean winter solstice. If we suppose him not to have written the Works and Days before B. C. 592, (the date of the correction of Solon,) the mean winter solstice was then falling Dec. 28 or 27, and the primitive Gamelion Jan. 19. If we suppose him to have been writing the same work any time between that date and the date of the Bœotian correction, B. C. 567, and purposely making use of the Attic correction, instead of the primitive equable year; there was no year in the cycle of Solon in which his Gamelion could fall later than Jan. 23; and there was one year in every cycle, (the last of the cycle itself,) in which it could not fall more than four or five days later than the solstice. B. C. 569, two years before the date of the Bœotian correction, was a year of that description; and B. C. 569, (as we hope to see by and by,) was actually the year of the composition of the Works and Days; the year at least to which it must have been adapted. With reason then might the description of the first month in the calendar of Hesiod, be such as to answer to the natural characters of the month next after the winter solstice. This brings us however to the question, Whether the year, which is recognised in the Works and Days, is lunar or solar, in general? and if lunar, whether it is the lunar year of Solon, in particular?

SECTION VI.—*Whether the kind of year, recognised by Hesiod, was lunar or solar? and if lunar, whether the Lunar Correction of Solon or not?*

i. In the passage produced supra, the warning to beware of the month Lenæon, after a long parenthesis, having been resumed, concluded with advising the farmer, as soon as the day's labour was over, to make haste home, lest he should be overtaken by the dark, and by bad weather, at once.

> Τὸν φθάμενος ἔργον τελέσας οἶκόνδε νέεσθαι,
> μήποτέ σ' οὐρανόθεν σκοτόεν νέφος ἀμφικαλύψῃ,
> χρῶτά τε μυδαλέον θείῃ, κατά θ' εἵματα δεύσῃ.

And though this may appear a precarious foundation, on which to build any inference respecting the calendar of the time, it should be remembered that the beginning of a lunar month, at all seasons of the year, would be ἀσέληνος; and reckoned from sunset, according to the common rule, both before and after the time of Hesiod, in the winter, would be dark directly after sunset; and in the depth of winter might be expected to be rainy. Such a piece of advice as this then could never have been more appropriate than at the beginning of Hesiod's Lenæon—if that was both a lunar month, and *a* winter month, and *the* winter month, properly so called, too.

ii. The word ἔνη occurs twice in the Works and Days; and once in the form of ἔνηφι in conjunction with αὔριον[d].

> Μηδ' ἀναβάλλεσθαι ἔς τ' αὔριον, ἔς τ' ἔννηφιν.

where, as the context shews, it has the sense of the day after the morrow, the third day; in which sense it is explained by the commentators and grammarians of antiquity[e]. Again, in the form of ἔνη[f].

[d] v. 408.

[e] Athenæus, iii. 56: αὔριον δ' ἡ ἔννηφι· τὴν γὰρ εἰς τρίτην 'Ησίοδος εἴρηκεν οὕτως.—Pollux, i. vii. 6. § 66: τὴν δὲ μετ' αὐτὴν (τὴν ὑστεραίαν) εἰκάσαις ἂν ὡς ἔνηφι 'Ησίοδος καλεῖ, εἰ μὴ τὴν τριακάδα οὕτω λέγει.—Scholia in Aristoph. ad Acharnenses, 171: Εἰς ἔνην· οἷον εἰς τρίτην (Hesiod being quoted). . τινὲς δὲ εἰς τριακάδα.—Harpocration, ἔνη καὶ νέα . . . . ἔνην δὲ καὶ εἰς ἔνην τὸ εἰς τρίτην λέγουσι.—Cf. Suidas, ἔνη καὶ νέα and ἔνηφι.—Hesychius, Ἔνη καὶ ἔνης· τὸ μετὰ τὴν αὔριον—εἰς ἔνην· εἰς τρίτην—ἔνηφι· εἰς τρίτην—ἔναρ· εἰς τρίτην Λάκωνες—'Επέναρ· εἰς τετάρτην—ἐσένας· εἰς τρίτην ἡμέραν.—ἔς τ' ἂν ἔνης· εἰς τρίτην.

[f] v. 768.

Πρῶτον ἔνη, τετράς τε, καὶ ἑβδόμη ἱερὸν ἦμαρ.

where it has, and can have, no meaning but that of the first day of the month. The 30th, or τριακὰς, which would be the ordinary meaning of such a term, is mentioned distinctly from it[g].

Proclus observes accordingly: Μετὰ δὲ ταύτην (that is the τριακὰς) ἀπὸ τῆς νουμηνίας (i. e. the ἔνη) ἀρξάμενος, ἐπαινεῖ τὰς τρεῖς, τὴν ἔνην, οὕτω καλῶν τὴν νουμηνίαν παρὰ τὸ ἕν, τὴν τετράδα, τὴν ἑβδόμην: and this gloss, in understanding ἔνη here of the νουμηνία, is correct, in explaining the term itself, as if derived from εἷς, μία, ἕν, it is mistaken. The word, as we have shewn[h], was the old Greek ἔνος, in the sense of παλαιός. The occurrence of the ἔνη then, *virtute termini*, implies the νέα also; and whether singly, or along with νέα, it still means that particular day in the calendar lunar month, which was equally divided between the last day of one natural month and the first day of the next, and belonged as much to the natural month which was going out, as to that which was coming in.

Now we were told[h] that the word τριακὰς was first applied to the 30th of the month by Thales; yet it is so applied by Hesiod[i]: Hesiod consequently could not have been older than Thales. We were told in like manner that the name of ἔνη καὶ νέα was first invented by Solon[j]; yet ἔνη too is used by Hesiod, and in the same sense of ἔνη καὶ νέα. If so, Hesiod could not have been older than Solon; and if he makes use of this name for a particular day of the month, he must have borrowed it from Solon; and, from the nature of the name itself, must have borrowed it as the name of a certain day in the lunar month. Such a name as that of the ἔνη καὶ νέα could not have been intended of any day in the solar month. Hesiod's ἔνη was the first of a lunar month; and that fact must be decisive that his calendar was a lunar calendar*.

* It is no objection that Solon's ἔνη καὶ νέα was the 30th of his lunar month; Hesiod's ἔνη is the first of his. The principle of the name was as applicable to the first of the month in the lunar calendar as to the last; and there was no more reason *a priori* why the τριακὰς should have been so called, than the νουμηνία. It might even be said that, if the name denoted that one day in the civil lunar month, which was strictly common to two

[g] 764. [h] Supra, page 2. [i] 764. [j] Supra, page 4

iii. Every month in the calendar of Solon[k] was nominally one of 30 days; and every one had a *τριακὰς*, whether it had a 29th or not. Every other month however had no 29th day; and in such months the 30th stepped into its place. Now at the beginning of the directions concerning days, a possible distinction is recognised in the reckoning of the *τριακὰς*, which can be explained only on this principle[l].

> *Ἤματα δ' ἐκ Διόθεν πεφυλαγμένος εὖ κατὰ μοῖραν*
> *πεφραδέμεν δμώεσσι· τριηκάδα μηνὸς ἀρίστην*
> *ἔργά τ' ἐποπτεύειν ἠδ' ἁρμαλιὴν δατέασθαι,*
> *εὖτ' ἂν ἀληθείην λαοὶ κρίνοντες ἄγωσιν.*

The commentary of Proclus on this passage shews that he understood its meaning, better than many modern scholars: *Ἄρχεται οὖν ὁ Ἡσίοδος ἐκ τῆς τριακάδος, καθ' ἣν ἡ ἀληθὴς ἐστι σύνοδος, ὅτε μὲν οὖσαν τριακάδα ἄνευ ἐξαιρέσεως, ὅτε δὲ κθ', ὅτε καὶ ὑπεξαιρεῖται ἡ πρὸ αὐτῆς ὑπὸ Ἀθηναίων. διὸ καὶ αὐτὸς, ἀξιῶν τὴν οὖσαν τριακάδα λαμβάνειν, εἶπεν·*

> *Εὖτ' ἂν ἀληθείην λαοὶ κρίνοντες ἄγωσιν*[m].

The 29th never having been exemtile in the Metonic cycle, the rule of exemtion here alluded to must have been that of the old Octaëteric cycle. And it is manifest that by virtue of this peculiar rule, which made the exemtile day the 29th, the *τριακὰς* or 30th must have been an ambiguous term; and would stand sometimes for the 30th, as its name implied, sometimes for the 29th, contrary to what it appeared to imply. But in the scheme of days, of which Hesiod was going to give an account, (days distinguished by their quali-

natural lunar months; in such a calendar as Solon's, in which the first month had only 29 days and the second had 30, the first day to which the name would be properly applicable would be the first of the second month, not the last of the first: and that Hesiod, by applying this term to the first of the month instead of the last, had corrected the phraseology of the calendar of Solon itself. The idiom of the Greek lunar calendar of later times is agreeable to the *usus loquendi* introduced by Solon; but neither is that any objection—since Hesiod was writing so soon after the introduction of the first lunar calendar, and before this phrase of the *ἕνη* of the month had yet been so fixed by common usage to a particular sense, that it could not with propriety have been applicable to any thing but the 30th of the month.

[k] Supra, 47.
[l] Verse 763. cf. Schol. p. 342.
[m] Cf. Moschopulus also in loc. p. 344: and ad v. 812. p. 364. Also Proclus ad v. 764. 766.

ties of good or evil, according to their proper order in the month,) one must not be confounded with another. The real 30th must be distinguished from the merely nominal one. And this is what he meant to express, by saying that the *τριακὰς* was good for such and such purposes, but only when people, reckoning it to be the *τριακὰς*, were reckoning it rightly.

For the same reason too the 29th in such months must be distinguished from the 30th; which makes him observe, in reference to that too[n]—

> *Παῦροι δ' αὖτε ἴσασι τρισεινάδα μηνὸς ἀρίστην*
> *ἄρξασθαί τε πίθου κ', τ. λ.*
> *. . . . παῦροι δέ τ' ἀληθέα κικλήσκουσι.*

i.e. people did not always know, or did not always reflect, that they were often speaking of the 29th when they appeared to be speaking of the 30th. Proclus' remark on this passage is: *Τοῦτ' ἐναργὲς ἐποίησεν ὅτι τρίτην εἰνάδα κέκληκεν οὐ κατὰ Ἀθηναίους τὴν δευτέραν καὶ εἰκοστὴν, ἀνάπαλιν ἀριθμοῦντας τὰς φθινούσας, δεκάτην, ἐννάτην, ὀγδόην καὶ ἑξῆς, ἀλλὰ τὴν πρὸ τριακάδος· περὶ γὰρ ταύτης ἀμφιβάλλουσιν, εἴτε ἐσχάτη ἐστὶν εἴτε πρὸ τῆς ἐσχάτης.* This ambiguity would certainly hold good of the last day of the *menses cavi* in the old Octaëteric calendar; which would always nominally pass for the 30th, and yet in reality be the 29th: and consequently in Hesiod's scheme be proper for the uses of the 29th but not for those of the 30th.

iv. The division of the solar month into three decads of days, (which Solon retained in the lunar,) and the proper style of each, (which he partly retained and partly modified,) appear in Hesiod; especially that of the last decad, which Solon invented expressly for his lunar calendar: but it is observable that in most of these instances he reckons the component parts of each division from the first to the tenth, as if each were an integral part of the month, complete in itself, and independent of the rest: which, as we have explained[o], was the rule of reckoning in the old solar month also. Thus the 6th of the month with him is the *πρώτη ἕκτη*[p]. The 16th is *ἕκτη ἡ μέσση*[q]. The 7th is the *ἑβδόμη ἁπλῶς*[r]. The 17th is the *μέσση ἑβδομάτη*[s]. The 4th is the

[n] v. 812—816.
[o] Supra, 3. note.
[p] verse 783.
[q] 780.
[r] 768.
[s] 803.

τετρὰς simply[t]. The 14th is the τετρὰς μέσση[v]. The 9th is the ἐνάτη or εἰνὰς absolutely[x], also the εἰνὰς πρωτίστη[y]. The 19th is the εἰνὰς μέσση[z]. And the 29th is the τρισειν̀ας or εἰνὰς τρίτη[a]. And this last, as an example of his rule, is the most to the purpose of all; proving that he recognised three εἰνάδες, one in each decad of the month: the last of which coinciding with the 29th of the month in general, the days in each decad must have been reckoned by him independently of those of the rest; otherwise his τρισειν̀ας must have denoted the 27th of the month*.

Under these circumstances, the fourth from the end of the month, the τετρὰς φθίνοντος or 27th, would be strictly coordinate with the fourth from the beginning, the τετρὰς ἱσταμένου. Such is the conjunction which he himself makes of them[b].

Πεφύλαξο δὲ θυμῷ
τετράδ' ἀλεύασθαι φθίνοντός θ' ἱσταμένου τε
ἄλγεα θυμοβορεῖν· μάλα τοι τετελεσμένον ἦμαρ.

Hesiod's scheme of days then, from the first to the 30th, may be represented as follows. The asterisk will shew which are specified as either good or bad, for such and such purposes. The rest he calls

Μετάδουποι ἀκήριοι οὔ τι φέρουσαι[c]—

and yet only the fifth of the first decad is pronounced absolutely bad. The remainder, even if bad for some things, were good for others.

Scheme of the Lunar Month of Hesiod, and characters of the days therein as good or bad.

Μηνὸς ἱσταμένου or αὐξομένου, v. 771.	Μηνὸς μεσοῦντος.
*1. ἕνη. verse 768.	*1 = 11. ἑνδεκάτη. v. 772. 777.
2.	*2 = 12. δυωδεκάτη. v. 772. 777.
3.	*3 = 13. τρισκαιδεκάτη. v. 778, 779.
*4. τετράς. v. 768. 798. 796. 807. 817.	*4 = 14. τετρὰς μέσση. v. 792. 817.
*5. πεμπτάς. v. 800.	*5 = 15.
*6. ἕκτη, ἡ πρώτη. v. 783.	*6 = 16. ἕκτη, ἡ μέσση. v. 780.

* Pollux, i. vii. 5. has noticed this rule of Hesiod's reckoning in the second and third decad, in which only it could have appeared to him to be any thing singular. Μετὰ δὲ τὴν ι' Ἡσίοδος μὲν ε' τὴν μέσην φησὶ, τὴν ε' τε καὶ ι' λέγων· ἡμῖν δὲ ῥητέον α' ἐπὶ ι', κ', τ. λ.

t 768. 798. 807. 817. v 792. 816, 817. x 770. y 809. z 808. a 812. b v. 795. c 821.

*7. *ἑβδόμη, ἱερὸν ἦμαρ.* v. 768.	*7 = 17. *ἑβδομάτη μέσση.* v. 803.
*8. *ὀγδοάτη.* v. 770. 788.	*8 = 18.
*9. *ἐνάτη* or *εἰνάς.* v. 770. 809. 810.	*9 = 19. *εἰνὰς μέσση.* v. 808.
*10. *δεκάτη.* v. 792.	*10 = 20. *εἰκὰς (μεγάλη).* v. 790.

Μηνὸς φθίνοντος.

*10 = 21. Μετ' *εἰκάδα.* v. 818.
9 = 22.
8 = 23.
7 = 24.
6 = 25.
5 = 26.
*4 = 27. *τετρὰς φθίνοντος.* v. 796.
3 = 28.
*2 = 29. *τρισεινάς.* v. 812.
*30. *τριηκάς.* v. 764.

If this scheme is not in every part agreeable to the idiom of aftertimes, it is so exactly in others; and from the fact of the agreement, as far as it holds good, we may reason as before, that Hesiod's month must have been lunar as much as Solon's, and the style of his month must have been the proper style of the lunar month, grafted upon and mixed up with that of the solar month still in use in the time of Hesiod. And from the fact of the disagreement, as far as it extends also, we may infer that neither the lunar month of Solon, nor its proper style, though already known of in the time of Hesiod, could yet have been received into general use*.

* It may be observed on the above list that, though every day of the month, in the opinion of Hesiod, for some reason or other must have been good or bad, or indifferent, he designates only one by the character of *ἱερὸν*, a sacred day, viz. the seventh of the month—assigning as the reason that it was the birthday of Apollo, and consequently sacred to Apollo. The seventh day of the month was sacred for this reason, even in the old solar calendar, long before the time of Hesiod; as we hope to shew on a future opportunity: nor did it cease to be sacred in this relation to Apollo, even in the lunar calendar. It is certain however that, in the lunar calendar of later times, very many days besides the seventh were sacred; that is, holidays, feriæ, consecrated to some particular divinity. What then is the reason, it may be asked, why none of them is specified but the seventh? and what reason can be assigned for it so probably as that these days were peculiar to the lunar calendar, and first acquired their character of sanctity in that? If so, they could not have been recognised in the solar calendar. The first of the

month, for instance, in aftertimes was universally esteemed a *sacred* day, but under the name of the *νουμηνία*, i. e. as the first of the lunar month. There was no *νουμηνία* in the primitive solar calendar; nor do we know, from any extant testimony, that the first of the equable month, either among the Greeks or any where else, was sacred, in the same sense in which the first of the lunar month was so. This distinction in the characters of the days of the month, according to Hesiod, that all were good or bad, or something between the two, but one only was sacred, and that one a day known to have been holy in the old solar calendar, and the only one, except perhaps the fifth, which is certainly known to have been so, is very observable; and may be added to the other arguments of the time when Hesiod was probably writing—the *transition-period* of the old Solar calendar—when neither was that still exclusively in use, nor the Lunar calendar yet universally adopted in its stead.

It may be worth while, (for the sake of comparison with the above list of Hesiod's,) to collect the days of this description in aftertimes. By these days however we shall understand those only, which stood in a particular relation to some one or more of the gods or goddesses of antiquity among the Greeks; as the fourth to Hermes, the sixth to Artemis, the seventh to Apollo, and the like—not every day in the calendar, which might have been kept as sacred, in the sense of a dies feriatus or holiday, with proper rites and ceremonies of some kind or other. And though these testimonies are such, as in their first intention apply only to the Attic lunar calendar; that calendar may be taken as a specimen of the rest: each of which was more or less distinguished in the same way.

Days of the Month, sacred to particular persons or objects of worship, first and properly in the Attic Lunar calendar.

i. The Νουμηνία—sacred to all the gods in general, or to Apollo, in particular: *Τὴν νεομηνίαν πάντων τῶν θεῶν νομίζουσιν εἶναι. ταύτην γὰρ οἱ πρόγονοι τοῖς θεοῖς ἀνέθεσαν διὰ τὸ πρώτην αὐτὴν εἶναι τοῦ μηνός. πάσας τε τὰς ἀρχὰς προσῆψαν αὐτοῖς ὀρθῶς ποιοῦντες . . τοῦ δὲ (τὸ δὲ) Ἀπόλλωνος ταύτην εἶναι νομίζειν τὴν ἡμέραν—εἰκότως τὸ πρῶτον φῶς τῷ αἰτιωτάτῳ τοῦ πυρὸς (ἀποδιδόασιν)· ἐκάλουν τε αὐτὸν καὶ Νεομήνιον. ἡ ἱστορία παρὰ Φιλοχόρῳ*[1]—*Ἐκαλεῖτο δὲ καὶ θυσία τις ἐπιμήνια, ἡ κατὰ μῆνα τῇ νουμηνίᾳ συντελουμένη*[2]—*Ἐπιμήνια· τὰ καθ' ἕκαστον μῆνα θυόμενα, ἢ τὰ ὑπὲρ ὅλου τοῦ μηνὸς ἅπαξ ποτὲ γινόμενα θύματα (ὑπὲρ τῆς πόλεως)*[3]—*Καὶ εἰ σήμερον ὁ ἀγὼν* (lege *ἄρχων*) *νουμηνίαν ἄγει*[4]—*Οὐ μετὰ τούτου ποτὲ Ἀπολλοφάνης . . . . συνεστιῶντο, μίαν ἡμέραν ταξάμενοι τῶν ἀποφράδων, ἀντὶ νουμηνιαστῶν κακοδαιμονιστάς σφισιν αὐτοῖς τοὔνομα θέμενοι*[5]—*Πῶς δὲ ταῖς νουμηνίαις εἰς τὴν ἀκρόπολιν ἀναβαίνοντες τἀγαθὰ τῇ πόλει διδόναι καὶ ἕκαστος ἑαυτῷ τοῖς θεοῖς εὔξεται*[6];—

1 Schol. ad Od. Υ. 155. cf. ad. Φ. 258.

2 Hesychius, *Ἐπιμήνιοι.*

3 Etym. M. in voce. cf. Corpus Inscription. 2656. Halicarnassus: where this stated sacrifice on the *νουμηνία* is styled *ἐπικουρία ὑπὲρ πόλεως.*

4 Theophrast. Characteres, 3. *Ἀγροικία.*

5 Lysias, Fragmenta, 31. § 2. *Ἐν τῷ ὑπὲρ Φανίου παρανόμων.* cf. Athenæus, xii. 76.

6 Demosthenes, xxv. 114. *Κατὰ Ἀριστογείτονος A.*

Παρὰ τῆς Ἑκάτης ἔξεστιν τοῦτο πυθέσθαι·
εἴτε τὸ πλουτεῖν εἴτε τὸ πεινῆν βέλτιον· φησὶ γὰρ αὕτη
τοὺς μὲν ἔχοντας καὶ πλουτοῦντας δεῖπνον κατὰ μῆν' ἀποπέμπειν,
τοὺς δὲ πένητας τῶν ἀνθρώπων ἁρπάζειν πρὶν καταθεῖναι[7].

—*Κατὰ δὲ νουμηνίαν οἱ πλούσιοι ἔπεμπον δεῖπνον ἑσπέρας εἰς θυσίαν τῇ Ἑκάτῃ ἐν ταῖς τριόδοις*[8]—

Τοὺς τρεῖς ξυνέχων τῶν δακτύλων ἀνίσταται
ὥσπερ λιβανωτὸν ἐπιτιθεὶς νουμηνίᾳ[9]—

Κατὰ νουμηνίαν γὰρ ἔθος εἶχον λιβανωτοὺς ἐπιτιθέναι τοῖς ἀγάλμασι[10]—*Θεόπομπος· Πηνελόπῃ·*

Καί σε τῇ νουμηνίᾳ,
ἀγαλματίοις ἀγαλοῦμεν ἀεὶ καὶ δάφνῃ[11]—

Τὸν δὲ Κλέαρχον φᾶναι ἐπιτελεῖν καὶ σπουδαίως θύειν ἐν τοῖς προσήκουσι χρόνοις, κατὰ μῆνα ἕκαστον ταῖς νουμηνίαις στεφανοῦντα καὶ φαιδρύνοντα τὸν Ἑρμῆν καὶ τὴν Ἑκάτην καὶ τὰ λοιπὰ τῶν ἱερῶν[12]—

Στρατόνικος εἰς Ἄβδηρ' ἀποδημήσας ποτὲ
ἐπὶ τὸν ἀγῶνα τὸν τιθέμενον αὐτόθι,
ὁρῶν ἕκαστον τῶν πολιτῶν κατ' ἰδίαν
κεκτημένον κήρυκα, κηρύττοντά τε
ἕκαστον αὐτῶν ὅτε θέλοι νουμηνίαν κ', τ. λ.[13]—

The peacocks of Demus son of Pyrilampes at Athens used to be shewn to the people once a month on the Νουμηνίαι: *Ἀλλὰ τὰς μὲν νουμηνίας ὁ βουλόμενος εἰσῄει· τὰς δ' ἄλλας ἡμέρας εἴ τις ἔλθοι βουλόμενος θεάσασθαι οὐκ ἔστιν ὅστις ἔτυχε. καὶ ταῦτα οὐκ ἐχθὲς οὐδὲ πρώην ἀλλ' ἔτη πλέον ἢ τριάκοντα ἐστίν*[14]—The *Νουμηνία* was a stated market day, especially for slaves[15]—*Ἐκάλουν δὲ καὶ ἀπὸ τῆς ἡμέρας ἐν ᾗ ὠνήσαντο τὸν οἰκέτην, ἐξ οὗ καὶ τοὺς Νουμηνίους ὠνόμαζον*[16].

ii. The second, *Δευτέρα ἱσταμένου.* Sacred to the *Ἀγαθὸς δαίμων,* and the heroes. *Ἀγαθοῦ δαίμονος· . . . καὶ τὴν δευτέραν ἡμέραν οὕτως ἐκάλουν*[17].—*Καὶ γὰρ Ἕλληνες ἐν τῇ νουμηνίᾳ τοὺς θεοὺς σεβόμενοι τὴν δευτέραν ἥρωσι καὶ δαίμοσιν ἀποδεδώκασι, καὶ τῶν κρατήρων ὁ δεύτερος ἥρωσιν ἐπικίρναται καὶ ἡρωΐσι*[18].

iii. The third, *Τρίτη ἱσταμένου.* Sacred to Athena and the *Χάριτες.* *Τριτομηνίς· . . . τὴν τρίτην τοῦ μηνὸς τριτομηνίδα ἐκάλουν. δοκεῖ δὲ γενέθλιος τῆς Ἀθηνᾶς. Ἴστρος δὲ καὶ τριτογένειαν αὐτήν φησι διὰ τοῦτο λέγεσθαι, τὴν αὐτὴν τῇ σελήνῃ νομιζομένην*[19]—*Τριτομηνίς· ἑορτὴ ἀγομένη Ἀθηνᾶς τῇ*

7 Aristophanes, Plutus, 594.
8 Schol. in loc.
9 Vespæ, 95. cf. ad 171: Acharn. 999.
10 Schol. in loc. cf. ad 171.
11 Anecdota, 328. 10. *Ἀγῆλαι.*
12 Porphyry, De Abstinentia, ii. 16. Cf. Libanius, i. 394. 14. Orat. xii. *Εἰς Ἰουλιανὸν αὐτοκράτορα Ὕπατον.* The *νουμηνίαι* still stated times of sacrifice with some people.
13 Athenæus, viii. 41.
14 Antiphon, apud Athen. ix. 56. cf. Harpocration, *Πυριλάμπης*: Ælian, De Nat. Anim. v. 21.
15 Cf. Equites, 43.
16 Phot. Cod. 279. Helladius, 532. 40–533. 1.
17 Hesychius: cf. Suidas, *Ἀγαθοῦ δαίμονος*: Anecdota, 209. 14. *Ἀγαθοῦ δαίμονος.*
18 Plutarch, Quæstiones Romanæ, xxv. The Scholia in Nubes 616, *κυδοιδοπᾶν*, make the second of the month sacred to Posidon also.
19 Harpocration in voce: cf. Arnob. adv. Gentes, iii. p. 118 ad med. Aristoteles, ut Granius memorat . . . Minervam esse lunam probabilibus argumentis explicat.

τρίτῃ[20]—*Τριτογένεια· ἡ Ἀθηνᾶ, . . . ἢ ἐπειδὴ τριταία γέγονεν, οἱονεὶ ἡ φαινομένη τριταία· καὶ γὰρ τὴν αὐτὴν εἶναι τῇ σελήνῃ, καὶ τὴν τρίτην τοῦ μηνὸς τριτομηνίδα ἐκάλουν· δοκεῖ δὲ γεγενῆσθαι τότε ἡ Ἀθηνᾶ*[21]—*Τριτογένεια . . . ἢ ὡς ἐν τρίτῃ μηνὸς γενομένη*[22]—*Καὶ τριγένητος θεά . . . ἢ ὅτι κατὰ Καλλισθένην τρίτῃ τοῦ μηνὸς ἐγενήθη. διὸ καὶ παρ' Ἀθηναίοις ἡ τρίτη ἱερὰ τῆς Ἀθηνᾶς . . . ἢ ὅτι ἡ αὐτή ἐστι τῇ σελήνῃ, ἡ δὲ σελήνη ἀπὸ συνόδου τριταία φαίνεται*[23].

iv. The fourth, *Τετρὰς ἱσταμένου*. Sacred to Hermes and to Hercules: and to Aphrodite *Πάνδημος*. *Ἡ τετάρτη ἱερὰ Ἀφροδίτης καὶ Ἑρμοῦ*[24]—*Διόπερ Μένανδρος, ἐν Κόλακι, τὸν τοῖς τετραδισταῖς διακονούμενον μάγειρον ἐν τῇ τῆς Πανδήμου Ἀφροδίτης ἑορτῇ ποιεῖ ταυτὶ λέγοντα, κ', τ. λ.*[25]—

Οἴμοι τάλας,
οἴμοι πλακοῦντος τοῦ 'ν τετράδι πεπεμμένου[26]—

Ἑρμεῖ δὲ μάλιστα τῶν ἀριθμῶν ἡ τετρὰς ἀνάκειται· πολλοὶ δὲ καὶ τετράδι μηνὸς ἱσταμένου γενέσθαι τὸν θεὸν ἱστοροῦσι[27]—*Ἀνάκειται δὲ αὐτῷ . . . ἡ τετρὰς ἄλλον τρόπον ἤπερ τῷ Ἡρακλεῖ, ἐξ οὗ παροιμία, τὸ ἐν τετράδι γέγονας, ἤγουν ἐν ἀποφράδι ἡμέρᾳ· ἐπεὶ καὶ Ἡρακλῆς ἐν ταύτῃ γεννηθεὶς κακὸν διήθλει βίον . . . καὶ ἡ τετρὰς δέ φησιν ἱερὰ τοῦ θεοῦ* (Hermes)[28]—*Τετράδι μέν τ' οἴχου· τετράδι μέν φασι γενέσθαι Ἡρακλέα*[29]—*Τετράδι γέγονας· ἐπὶ τῶν ἄλλοις πονούντων. καὶ γὰρ τὸν Ἡρακλέα τετράδι γεννηθέντα Εὐρυσθεῖ ταλαιπωρῆσαι. Φιλόχορος δὲ αὐτήν* (*φησι*) *καὶ ἐπὶ Ἑρμοῦ δύνασθαι λέγεσθαι· διατεθεῖσθαι δὲ Ἡρακλεῖ τὴν ἡμέραν ἐν ταύτῃ εἰς θεοὺς μεταστάντι*[30]—*Ἀριστώνυμος δ' ἐν Ἡλίῳ ῥιγοῦντι καὶ Σαννυρίων ἐν Γέλωτι τετράδι φασὶν αὐτὸν* (Aristophanes) *γενέσθαι, διὸ τὸν βίον κατέτριψεν ἑτέροις πονῶν. οἱ γὰρ τετράδι γεννώμενοι πονοῦντες ἄλλοις καρποῦσθαι παρέχουσιν, ὡς καὶ Φιλόχορος ἐν τῇ πρώτῃ περὶ ἡμερῶν ἱστορεῖ. ταύτῃ δὲ καὶ Ἡρακλῆ φασι γεννηθῆναι*[31].

v. The sixth, *Ἕκτη ἱσταμένου*, and the seventh, *Ἑβδόμη ἱσταμένου*, sacred to Artemis and Apollo respectively. We reserve the plenary illustration of the character and estimation of both these days for a future opportunity. At present the following may suffice. *Ἔξω τῶν ἑορτῶν ἱεραί τινες τοῦ μηνὸς ἡμέραι νομίζονται Ἀθήνησι θεοῖς τισιν, οἷον νουμηνία καὶ ἑβδόμη Ἀπόλλωνι, τετρὰς Ἑρμῇ, καὶ ὀγδόη Θησεῖ, Χάρισι τρίτη. . . ἑκάστου γὰρ μηνὸς ἡ νουμηνία καὶ ἡ ἑβδόμη ἀφιέρωτο τῷ Ἀπόλλωνι, ἡ δὲ τετάρτη τῷ Ἑρμῇ· ἡ δὲ ἕκτη τῇ Ἀρτέμιδι, καὶ ἄλλη ἄλλῳ*[32]—*Φιλόχορος δὲ ἐν τῷ περὶ ἡμερῶν ἡλίου*

20 Anecdota, 306. 32.

21 Etym. M. in voce: cf. Hesych. *τριτομηνίς· ἡ τρίτη τοῦ μηνός.*

22 Eustathius ad Il. Δ. 515. 504. 28. cf. ad Θ. 39. 696. 38: ad Od. Γ. 378. 1473. 15. Also, Anecdota Græca Par. iii. 30. 23. Schol. ad Il. Θ. 39.

23 Tzetzes ad Lycophr. 519. Cf. for the sacredness of this day to the *Χάριτες*, the scholia ad Plutum, 1127.

24 Proclus ad Hesiod. 798.

25 Athenæus, xiv. 78: Pausanias, i. xxii. 3. this Aphrodite was so named from the formation of the *δῆμοι* by Theseus into one community or *πόλις*.

26 Aristophanes, Plutus, 1125. cf. the schol. in loc., and Suidas, *πεπεμμένου πλακοῦντος*, and *πέττουσα.*

27 Plutarch, Symposiaca, ix. Problema iii. § ii.

28 Eustathius ad Il. Ω 336. 1353. 5. cf. ad Od. E. 262. 1534. 35.

29 Hesychius in voce.

30 Photii Lex. in voce: cf. Suidas, *τετράδι γέγονας*· Parœmiographi Græci, Zenobii Epitome, Centur. vi. 17: also e Cod. Bodl. 867.

31 Scholia in Platon. ii. 331. Apologia, 95. 13. cf. the Vita Aristophanis, Schol. ad Aristophan. iv. Pars i. xi. De Comœdia, p. 34. 7: xiii. 38. 39.

32 Scholia in Plutum, 1127.

καὶ Ἀπόλλωνος λέγει αὐτὴν (sc. *τὴν ἕνην*)· *ἡ δ' Ἡρακλέους καὶ Ἑρμοῦ ἐστιν· ἡ δὲ ἑβδόμη ἱερὰ Ἀπόλλωνος . . . ἡ τετρὰς Ἡρακλέους, ἐν αὐτῇ γὰρ ἐτέχθη. καὶ λέγομεν ὅτι*

Τετράδι κοῦρος ἔγεντο καὶ οὔποτε πάγκακος ἔσσῃ[33]—

Ἕκτη ἡμέρα· ἐπὶ τῶν ἀγαθῶν ἡμερῶν, ἐν ταύτῃ γὰρ μυθεύεται τοὺς θεοὺς νενικηκέναι τοὺς γίγαντας[34]—Certain cakes were made at Athens, called *σελῆναι*, and after every six of these, a seventh, called *βοῦς ἕβδομος, κατὰ μίμησιν πρωτοφύους σελήνης*[35]—*Ὅθεν οἱ Πυθαγόρειοι Ἀθηνᾷ τὴν ἑπτάδα ἀνατίθενται*[36].

vi. The eighth, *Ὀγδόη ἱσταμένου*. Sacred to Posidon and to Theseus. *Ἔτι δὲ τοῖς θεοῖς ἀπεικάζων ἐπωνόμαζεν ὡς Ἀπόλλωνα μὲν τὴν μονάδα οὖσαν, Ἄρτεμιν δὲ τὴν δυάδα, τὴν δὲ ἑξάδα γάμον καὶ Ἀφροδίτην, τὴν δὲ ἑβδομάδα καὶ Καιρὸν καὶ Ἀθηνᾶν, Ἀσφάλιον δὲ Ποσειδῶνα τὴν ὀγδοάδα, καὶ τὴν δεκάδα παντέλειαν*[37]—

Ὦ πλεῖστα Θησείοις μεμυστιλημένοι[38]—

Ταῖς ὀγδόαις τὰ Θησεῖα ἦγον, καὶ ἀνεῖτο ἡ ὀγδόη πᾶσα τῷ Θησεῖ[39]—*Ὀγδόῃ δὲ τὰ Θησεῖα ἦγον, καὶ πᾶσαν τὴν ἡμέραν ἐπανηγύριζον εἰς τιμὴν τοῦ ἥρωος*[40]—*Ὀγδόδιον· θυσία παρὰ Ἀθηναίοις τελουμένη Θησεῖ*[41]—*Θυσίαν δὲ ποιοῦσιν αὐτῷ τὴν μεγίστην ὀγδόῃ Πυανεψιῶνος, ἐν ᾗ μετὰ τῶν ἠϊθέων ἐκ Κρήτης ἐπανῆλθεν. οὐ μὴν ἀλλὰ καὶ ταῖς ἄλλαις ὀγδόαις τιμῶσιν αὐτὸν, ἢ διὰ τὸ πρῶτον ἐκ Τροιζῆνος ἀφικέσθαι τῇ ὀγδόῃ τοῦ Ἑκατομβαιῶνος, ὡς ἱστόρηκε Διόδωρος ὁ περιηγήτης*[42], *ἢ νομίζοντες ἑτέρου μᾶλλον ἐκείνῳ προσήκειν τὸν ἀριθμὸν τοῦτον ἐκ Ποσειδῶνος γεγονέναι λεγομένῳ. καὶ γὰρ Ποσειδῶνα ταῖς ὀγδόαις τιμῶσιν*[43].

vii. The ninth, *Ἐνάτη ἱσταμένου*. Sacred to the Muses and the Sun (see art. viii.) and to Rhea. *Ἡ γὰρ ἐννεὰς δήπου ταῖς Μούσαις, ἡ δὲ ἑβδομὰς τῷ Μουσηγέτῃ, προσκεκλήρωται*[44]—*Πρώτη ἐννὰς ἡ ἡμέρα τῶν Μουσῶν ἐστι*[45]. . —

Ἦ ἅτε κερνοφόρος ζάκορος βωμίστρια Ῥείης
εἰνάδι λειοφόροισιν ἐνιχριμφθεῖσα κελεύθοις
μακρὸν ἐπεμβοάα γλώσσῃ θρόον· οἱ δὲ τρέουσιν
Ἰδαίης ῥιγηλὸν ὅτ' εἰσαΐωσιν ὑλαγμόν[46].

viii. The fifteenth, *Πέμπτη μεσοῦντος*. Sacred to Athena. *Εἰ μὲν τῇ νουμηνίᾳ, ὅτι ἀρχὴ τοῦ μηνός . . . εἰ δὲ ἑβδόμη ἢ ἕκτη, ὅτι ἱεραὶ τοῖν θεοῖν . . . ἔχοις δ' ἂν καὶ περὶ τῆς ἐνάτης λέγειν ὅτι ἱερὰ τοῦ ἡλίου . . . εἰ δὲ πεντεκαιδεκάτη εἴη, ὅτι καὶ αὕτη τῆς Ἀθηνᾶς, καὶ ὅτι τέλειος ἐν τούτῳ ὁ κύκλος, καὶ εἰκὸς ἀνενδεῆ τὴν τοιαύτην εἶναι γένεσιν τοῦ ἀνδρός*[47].

ix. The eighteenth and nineteenth, *Ὀγδόη μεσοῦντος* and *Ἐνάτη μεσοῦντος*. Sacred to the Dii Manes. *Τὴν ἐννεακαιδεκάτην ὡς καὶ τὴν ὀκτωκαιδεκάτην τὰ πάτρια τῶν Ἀθηναίων καθαρμοῖς ἀποδίδωσι καὶ ἀποτροπαῖς, ὡς*

33 Proclus ad Hesiod. 768. cf. Moschopulus ad 768.
34 Parœmiographi Græci, e Cod. Coislin. 176.
35 Eustathius ad Il. Σ. 575. 1165. 4. cf. Hesychius in *Ἕβδομος βοῦς*.
36 Lydus De Mensibus, iii. 6. pag. 30. 19.
37 Stobæus, De Pythagora, Eclogæ Physicæ, i. 20 : ii. 10. Incerti Auctoris.
38 Aristophanes, Plutus, 627.
39 Schol. ad v. 627. 40 ad 628.
41 Hesychius in voce.
42 Cf. Plutarch, Theseus, xii.
43 Ibid. xxxvi. cf. xii et iv: also Proclus ad Hesiod. 788.
44 Plutarch, Symposiaca, ix. iii. 1.
45 Schol. ad Hesiod. 809.
46 Nicander, Alexipharmaca, 217.
47 Dionysius Hal. Rhetorica, 243. 1. Cap. iii. § 1.

SECTION VII.—*On the evidence of the year, in which the Works and Days were probably written, discoverable in them.*

The lunar anticipation on the calendar dates in the Octaëteric cycle, as we explained supra [d], amounted to three days in sixteen years: so that if the new moons in the Attic calendar were falling on the first of the month at the date of the correction, B. C. 592, 16 years after (B. C. 576) they would begin to fall on the fourth; and seven years later (B. C. 569) they would be beginning to fall even on the fifth. This may easily be put to the proof. Cycle iii. 8, Gamelion 1 was falling on Jan. 1, B. C. 569. There was a solar eclipse Jan. 5, on the 5th of Gamelion. Cycle iv. 1, Skirrhophorion 1 was falling on June 15, B. C. 568. There was a solar eclipse June 19.

Now, when the new moons were falling on the 5th of the month, the full moon would be falling on the 19th or 20th.

Φιλόχορος λέγει καὶ Ἀμφότερος, ἐξηγηταὶ τῶν πατρίων ἄνδρες [48]. In the month Anthesterion, these two days were the two last days of the Μιαραὶ ἡμέραι [49].

x. The twentieth, the twenty-first, and the twenty-second. The Εἰκὰς, Δεκάτη φθίνοντος, and Ἐνάτη φθίνοντος. All sacred to Athena: the 20th sacred to Apollo also. Ἱστάμενον μηνὰ ὡς εἰκάδα (ἑὼς εἰκάδος) ἔλεγον. μετὰ δὲ τοῦτο πρώτην φθίνοντος δευτέραν φθίνοντος. Φιλόχορος δὲ πάσας τὰς τρεῖς ἱερὰς λέγει τῆς Ἀθηνᾶς [50]—Εἰκάδιος, ἀπὸ τοῦ εἰκάς . . . ἐστὶ δὲ ὄνομα κύριον. ἐν τῇ εἰκάδι τοῦ μηνὸς ἑορτὴ ἐπετελεῖτο τῷ Ἀπόλλωνι, καὶ ἐλέγετο ἡ ἱέρεια εἰκάς. ἐπειδὴ οὖν ἐν ταύτῃ τῇ ἑορτῇ ἐγεννήθη λέγεται Εἰκάδιος [51].

xi. The twenty-eighth. Τρίτη φθίνοντος. Sacred to Athena. Τριτογενής· ἡ Ἀθηνᾶ . . ἢ ὅτι (τρίτῃ) φθίνοντος ἐγενήθη, ὡς καὶ Ἀθηναῖοι ἄγουσιν [52]—Τριτογενής· ἡ Ἀθηνᾶ· ἤ τοι ὅτι . . ἐγεννήθη (supple τρίτῃ) φθίνοντος [53].

xii. The thirtieth. Τριακάς· or Ἔνη καὶ νέα. Sacred to Hecate. Καὶ ταῖς τριακάσι δὲ αὐτῇ τὰ δεῖπνα φέρουσι [54]—Τὰς ἐν Ἅιδου τριακάδας: τιμᾶται ἡ τριακὰς ἐν Ἅιδου διὰ τὴν Ἑκάτην μυστικώτερον . . . ὅθεν καὶ ἀφιδρυμένη Ἑκάτη πρὸς ταῖς τριόδοις ἐστὶ, καὶ τὰ νεκύσια τῇ τριακάδι ἄγεται [55].

48 Proclus ad Hesiod. 808.

49 Vide our Origines Kalendariæ Italicæ, i. 424. *n.*

50 Proclus, ad Hesiod. 778. Cf. Moschopulus also.

51 Etym. M. Εἰκάδιος.

52 Suidas, in voce.

53 Photii Lexicon, in voce.

54 Athenæus, vii. 126, 127. 139. Cf. Art. i. supra.

55 Parœmiographi Græci, e Cod. Bodleiano, 905: cf. Diogeniani Prov. Centuria viii. 39.

d Page 34–42.

To put this too to the test, B.C. 569. Cycle iii. 8, Hecatombæon 1 would fall June 26, B. C. 569. There was a lunar eclipse July 15, Hecatombæon 20. Cycle iv. 1, Skirrhophorion 20 fell on July 4, B. C. 568. There was a lunar eclipse on July 4 B. C. 568. Now, there is a passage in the Works and Days, which relates expressly to the 20th of the month, and assigns it a very peculiar character[c]:

> Εἰκάδι δ' ἐν μεγάλῃ πλέῳ ἤματι ἵστορα φῶτα
> γείνασθαι· μάλα γάρ τε νόον πεπυκασμένος ἐστίν.

That some great distinction is thus assigned to the 20th is evident. The reason alleged for it in the ancient scholia is trifling in the extreme: for they explain it as if Hesiod meant only that the principal part of the month (i.e. two-thirds of the month) was summed up in the 20th. No day of the month, in the nature of things, could contain more than a 30th part of the whole; and it is simply absurd to talk of two thirds being contained in the 20th. Or if not, why was not a proportionable distinction allowed to the *δεκάτη*, or tenth, which, on this supposition, must have summed up one-third at least? and why was not the *τριακὰς* called the *μεγίστη*—if, on the same principle, it must have been the epitome of the entire month: it must have comprehended the whole in itself.

The true explanation of the distinction, in our opinion, is the fact just pointed out; the state of the calendar when Hesiod was writing this part of his Works and Days: viz. that the full moons were falling on the 20th of the month. The 20th of the month at this time was consequently the *πανσέληνον*—and that was a coincidence competent to distinguish it from the rest of the days of the month, and to entitle it to the epithets of *μεγάλη*, and *πλέον ἦμαρ*, above any of them. We observe too that, as to the character of this day, its peculiarity consists in being the most proper for the birth of one who was to be *ἵστωρ*, "a man of knowledge," and *νόον πεπυκασμένος*—of a thoroughly well-furnished mind: which, in our opinion, confirms the explanation. For if there was any connection between the days on which births might happen, and the characters of those

[c] v. 790.

who should be born upon them; with reason might the πανσέληνον—the day on which the moon itself was at the full, and the most completely furnished with light, and the most perfect reflection of the centre and source of light itself—be reckoned the fittest birthday for one who was destined to excel in wisdom and knowledge. The full moon was the most natural symbol imaginable of a mind stored with wisdom—replenished with knowledge, natural and acquired. And so it occurred to the author of the Book of Ecclesiasticus to regard it—who, under the consciousness of the various treasures of experience and observation laid up in his own mind, and ready at any time to be produced, compares himself to the moon at the full [f].

The state of the calendar at this time, and the relation of the true lunar dates to those of the calendar, serve also to explain the characteristic purposes, assigned to other days of the month. The fourth of the month, for example, is recommended as a fit day for being married upon [g]. Proclus observed, on v. 780, that the σύνοδος, or lunar conjunction, was commonly chosen for that purpose: and if the full moons were falling on the 20th, the conjunctions might be falling on the 4th. The same day is recommended for broaching a wine jar [h]; and beginning to build a ship [i]; which it might have been expected *a priori* would rather have been assigned to the ἕνη, or first of the month [k]. But in the true lunar calendar, the ἕνη must be reckoned the day of the conjunction — and in the octaëteric calendar that would not necessarily be the first of the month. The first quarter of the moon too bearing date on the τετρὰς ἱσταμένου, the last would bear date on the τετρὰς φθίνοντος; and these days might thus be classed together, as standing in the same or an analogous relation to the true lunar reckoning * of the time being.

* In the second of these references Proclus appears to have understood the allusion to the fourth day of the third decad, the 24th of the month; Τὰς δὲ τετράδας ἄμφω εἶναι ἱερὰς, τὴν μὲν ὡς μάλιστα τὸ σεληναῖον ἐμφαί-

[f] Cap. xxxix. 12. cf. l. 6. and supra, p. 267, *n.* Art. viii. Dionys. Hal. Rhetorica, in praise of the 15th of the month, ὅτι τέλειος ἐν τούτῳ ὁ κύκλος (τῆς σελήνης scil.) καὶ εἰκὸς ἀνενδεῆ τὴν τοιαύτην εἶναι γένεσιν τοῦ ἀνδρός.

[g] v. 798. [h] v. 817. [i] 807. [k] 768.

The new moon, the full, and the last quarter in Hesiod's lunar month, would thus seem to have been noticed, each in its proper order; the only quarter not specified would seem to have been the second: and even that is probably alluded to—verse 772 and sqq.—where he was speaking of the different properties of the eleventh and the twelfth of the month respectively, and of each as good of its kind, but those of the twelfth as much the better.

> Ἡ δὲ δυωδεκάτη τῆς ἑνδεκάτης μέγ' ἀμείνων·
> τῇ γάρ τοι νεῖ νήματ' ἀερσιπότητος ἀράχνης

νουσαν φῶς, τὴν δὲ ὡς τοῦτον ἔχουσαν πρὸς τὴν τετράδα (πρὸς τὴν τριακάδα) λόγον ὃν ἡ ἑβδόμη πρὸς τὴν νουμηνίαν. καὶ γὰρ ἡ τετάρτη καὶ εἰκοστὴ ἑβδόμην ἔχει τάξιν πρὸς τὴν ἐσχάτην, Ad v. 795. Nor would we undertake to say that Hesiod did not intend his second τετρὰς of the fourth of the last decad, the proper style of which decad, as we learn from Homer, was that of the μὴν φθίνων. But we do not see in what sense the 24th of the month could bear the same relation to the τριακὰς or 30th, as the fourth to the seventh. The 24th was the seventh from the 30th—but the fourth was only the third from the seventh.

The astronomers of later times joined together the τετρὰς ἱσταμένου and the τετρὰς φθίνοντος, (the 4th and the 27th,) as the respective dates of analogous lunar phases, one at the same distance from the beginning as the other from the end of the natural or civil month; and as distinguished respectively by the same or similar ἐπισημασίαι—i.e. symptoms or affections of the weather. Thus Aratus,

> Μάλα δ' ἄρκιον εἴη
> φράζεσθαι φθίνοντος ἐφισταμένοιό τε μηνὸς
> τετράδας ἀμφοτέρας· αἱ γάρ τ' ἄμυδις συνιόντων
> μηνῶν πείρατ' ἔχουσιν, ὅτε σφαλερώτατος αἰθὴρ
> ὀκτὼ νυξὶ πέλει, χήτει χαροποῖο σελήνης. Diosemeia, 416.

And Theophrastus: vi. i. 783. 5: De Signis Pluviarum: Μάλιστα δὲ κυριώτατα ἀπὸ τοῦ ἡλίου καὶ τῆς σελήνης. ἡ γὰρ σελήνη νυκτὸς οἷον ἥλιός ἐστι· διὸ καὶ αἱ σύνοδοι τῶν μηνῶν χειμέριοί εἰσιν, ὅτι ἀπολείπει τὸ φῶς τῆς σελήνης ἀπὸ τετράδος φθίνοντος μέχρι τετράδος ἱσταμένου—Ibid. 784. 8: Ὡς δ' αὔτως ἔχει καὶ περὶ τὸν μῆνα ἕκαστον. διχοτομοῦσι γὰρ αἵ τε πανσέληνοι καὶ αἱ ὀγδόαι καὶ αἱ τετράδες· ὥστε ἀπὸ νουμηνίας ὡς ἀπ' ἀρχῆς δεῖ σκοπεῖν. μεταβάλλει γὰρ ὡς ἐπιτοπολὺ ἐν τῇ τετράδι· ἐὰν δὲ μὴ, ἐν τῇ ὀγδόῃ· εἰ δὲ μὴ, πανσελήνῳ. ἀπὸ δὲ πανσελήνου εἰς ὀγδόην φθίνοντος, καὶ ἀπὸ ταύτης εἰς τετράδα· ἀπὸ δὲ τετράδος εἰς τὴν νουμηνίαν. Cf. Geoponica, lib. i. 3. ad fin. i. 7. Virgil also attributes the first decided significancy of this kind to the fourth of the lunar month. Georgica, i. 432:

> Sin ortu quarto, namque is certissimus auctor.

Cf. the Argonautica of Valerius Flaccus, ii. 356–370—for a *locus classicus*, to illustrate this supposed property of the *luna quarta*.

ἤματος ἐκ πλείου, ὅτε τ' ἴδρις σωρὸν ἀμᾶται·
τῇ δ' ἱστὸν στήσαιτο γυνὴ προβάλοιτό τε ἔργον.

By the *ἴδρις* here the ant is meant; which Solomon also recommends as a pattern of industry and forethought. By *ἤματος ἐκ πλείου* we must understand that period of the day when it is noon, or just past the point of noon. Now if the new moons at this time were falling on or about the 4th of the month, the first quarters would be falling on or about the 11th or 12th; and on the 12th at this time rather than on the 11th: and the moon being then seven days old complete, it would be rising at noon and setting at midnight. This was probably what Hesiod had in his mind, when specifying the characters of the 11th and the 12th of the month, respectively; each as good, but that of the 12th, as the better of the two: because the true lunar quarter at this time did more truly coincide with the 12th than with the 11th of the calendar month. And as a proof of that, by virtue of some secret sympathy between the noon of the solar day, and the rising of the moon at noon also, both the ant and the spider might be observed to be plying their respective tasks more diligently at that time of the day, on the 12th than on the 11th. The spider here described was most probably the gossamer—(to judge from the epithet applied to it, *ἀερσιπότητος*—i. e. as flying through the air, or buoyed up in the air, and enabled to float there by means of its own thread)—and the gossamer would naturally be most active at the noon of a summer's day. And as to the ant and its sympathy with the lunar phases, it is asserted by Pliny, as well as by Hesiod *[m].

* It may appear at first sight very improbable that though Thebes, and the rest of the Bœotian community had not yet corrected their calendar,

m H. N. xviii. 69. § 5. p. 244. Præterea tam facile intelligi, ut formica, minimum animal, interlunio quiescat, plenilunio etiam noctibus operetur. It is possible too that the distinction pointed out in v. 818. between the morning and the evening of the 21st—

. . Παῦροι δ' αὖτε μετ' εἰκάδα μηνὸς ἀρίστην
ἠοῦς γινομένης· ἐπιδείελα δ' ἐστὶ χερείων—

and v. 808, between the morning and the evening of the 19th—

εἰνὰς δ' ἡ μέσση ἐπιδείελα λώϊον ἦμαρ—

may be explained on the same principle. The former would be the day after the full, if the full was now falling on the 20th; and the moon on the morning of that day would appear to be as much at the full as the evening before—but not so much so on the evening of that day. Hence the morning, as partaking more of the good qualities of the *πανσέληνον*, would be

SECTION VIII.—*On the astronomical or other notes of time which occur in the Works and Days.*

If Hesiod was writing B. C. 569, when the first of Gamelion, Cycle iii. 8, was falling on Jan. 1, and the mean winter solstice Dec. 27 or 28, the true Dec. 26 or 27; his description of that month under the name of Lenæon, must

and when they did so adopted an octaëteris of a different Type from that of the Attic one of Solon, the small and insignificant polity of Ascra should already have corrected its calendar, and already adopted as its own the Attic calendar of Solon itself. And yet even this supposition will not be so improbable after all, if every community, the smallest and most insignificant in other respects, nevertheless had its own lunar correction of the Primitive solar calendar; and in choosing both the time for its proper correction, and the kind of correction which should be adopted, decided for itself.

This supposition is the best adapted to explain the allusions which occur in Hesiod; intended no doubt in their immediate reference for his Works and Days, yet true, as we have seen, of the Attic calendar of the time being: and in particular the way in which he refers to the month Lenæon, which is proper and natural only for a well known month of that name. And that would be consistent, if it was in reality the first month in the calendar of Ascra. It is certain that the correction of Solon was adopted in other parts of Greece at the same time as in Attica; and even in Asia Minor at the same time as in the mother country: and Hesiod being a contemporary of Solon's, and a man of mature age and experience when the latter corrected the calendar, as well as the most illustrious poet of his day, it is far from improbable that he was personally known to Solon, and might have coincided with his views in proposing to correct the calendar, and have used his own influence among his countrymen in particular, to do the same thing at Ascra, which Solon was doing at Athens. And this is the conclusion to which we ourselves on the whole are inclined to come; viz. that instead of contriving a calendar for his own Works and Days—the same in principle with the Attic correction of Solon, (as he must otherwise have done,) he did in reality make use of the calendar of Ascra, and accommodate his directions to that; but the calendar of Ascra, in every thing except the names of the months, (or possibly in the names of the months, all but the first,) at this very time was the same with the Attic of Solon.

better than the evening, of the 21st. On the 19th, on the other hand, the evening would be better than the morning, because the full moon, dated on the 20th, would be nearer on the evening than on the morning of the 19th. It is manifest that by ἐπιδείελα in each of these instances the afternoon of the day is intended, or so much of it, as would come between the δείλη πρωΐα, and sunset, the δείλη ὀψία.

appear the most natural and appropriate imaginable*. Let us proceed then to consider how far this date of the Works and Days will be consistent with any other notes of time discoverable in them; especially those of an astronomical character.

i. Of this number the most precise and definite is that of the acronychal rising of the star Arcturus—by its rising acronychally being understood its first becoming visible in the evening twilight—i.e. about an hour after sunset[n].

> Εὖτ' ἂν δ' ἑξήκοντα μετὰ τροπὰς ἠελίοιο
> χειμέρι' ἐκτελέσῃ Ζεὺς ἤματα, δή ῥα τότ' ἀστὴρ
> Ἀρκτοῦρος, προλιπὼν ἱερὸν ῥόον ὠκεανοῖο,
> λαμπρὸν παμφαίνων ἐπιτέλλεται ἀκροκνέφαιος[o].

The first observation which may be made on this passage is that it supposes these 60 days to have been completely ended before the first appearance of the star in question; such being the proper sense of ἐκτελέσῃ. The next is, that these 60 days include as many nights; that is, Hesiod's day stands for his day and his night: and thirdly that both must have been reckoned from evening, according to the common rule of the time. The meaning therefore of the proposition is, That, when 60 nights and 60 days, reckoned from the evening of the day of the winter solstice, (and consequently winter nights and days,) should have been completed, then on the evening of the 61st, soon after sunset, the star Arcturus should be seen, for the latitude of Ascra, rising in the twilight.

Proclus observes on the passage: Ἐν οὖν τῇ Ἑλλάδι τῇ Παρθένῳ συνανατέλλει ὁ Ἀρκτοῦρος εἰκότως, μετὰ ἑξήκοντα τῶν χειμερινῶν τροπῶν (ἡμέρας)· ἑσπέριος δὲ ἐπιτέλλει. τότε γὰρ ἐν Ἰχθύσιν ἥλιός ἐστι, καὶ ἡ Παρθένος οὖσα κατὰ διάμετρον ἑσπέρας

* And it may be here observed that, if the head of the calendar was now attached to this month, and this month was standing in this relation to the winter solstice, the τροπαὶ κατ' ἐξοχὴν in the natural year, in his apprehension, would be the winter solstice; and we might expect *a priori* to find the winter solstice somewhere or other alluded to in that capacity. Such an allusion occurs Opp. 477:

> Εἰ δέ κεν ἠελίοιο τροπαῖς ἀρόῃς χθόνα δῖαν,
> ἥμενος ἀμήσεις κ', τ. λ.

for this could have been meant only of the winter solstice.

n Anecdota Gr. 372. 1: Ἀκρόνυξ· οἷον ἀρχὴ νυκτός. o v. 562.

ἀνίσχει. Arcturus however is not one of the Zodiacal stars: and it is much too indefinite an explanation to say that it would rise or set with the sign of Virgo. Modern astronomers and chronologers however have often put this statement of Hesiod's to the test of calculation; but, as they have always assumed his age much too early, it is no wonder that they have not been able to verify it, except within certain limits. The earlier the age of Hesiod, the later in proportion must be the date of the winter solstice in his time, and the earlier the acronychal rising of a given star. And if such a phenomenon was truly happening 60 days after the winter solstice, B. C. 569, it was impossible it could have been happening the same number of days after it, two or three hundred years before. Let us take Mr. Ideler's calculation, as a specimen of those of others in general. Assuming the age of Hesiod *circa* B. C. 800, when the mean winter solstice was falling Dec. 29—and supposing the observation to have been intended for the parallel of 38° N. latitude, he determines the acronychal rising of Arcturus to Feb. 24: 57 days only after Dec. 29, instead of 60. If however the age of Hesiod is assumed B. C 570, then the mean winter solstice for that epoch being assumed two days earlier, Dec. 27, and Mr. Ideler's date of the sidereal phenomenon in question one day later, Feb. 25, from the former of these to the latter, the interval will be exactly 60 days, the precise number specified by Hesiod himself*. Thus much may suffice here for the consistency of this note of time with our assumed date of the work in which it appears. A more complete proof of it will be found in the note subjoined.†

* The acronychal rising of Arcturus was noted in all the Parapegmata of antiquity: in the Julian calendar, (no doubt for the latitude of Rome, 41° 30′ N.) according to Pliny, Feb. 23=24: to Columella, Feb. 21=22 (see our Origines Kal. Italicæ, iv. 150). By Eudoxus apud Geminum, Feb. 25: by Euctemon, March 5: in Ptolemy De Apparentiis, for the parallel of 15 hours, Feb. 25 and March 1.

† With respect to these astronomical notices in the Works and Days, preliminary to any attempt to put them to the test of calculation, we will begin with assuming that they were all intended of the year B. C. 570–569; i. e. the earliest of them being referrible to the winter solstice B. C. 570, the rest must be understood of B. C. 569.

The first thing to be considered is the cardinal points of this year;

that is, the ingresses of the sun into the several quarters; and in what manner they must have been assumed by Hesiod himself. These several ingresses, from the winter solstice B. C. 570 to the same natural term B. C. 569, both the mean and the true, strictly determined, stood as follows.

B. C. 570—B. C. 569.

	Mean.	B. C.		True.	B. C.
W. S.	Dec. 27 or 28.	570.	W. S.	Dec. 26.	570.
V. E.	Mar. 29.	569.	V. E.	Mar. 27.	569.
S. S.	June 28.	—	S. S.	June 29.	—
A. E.	Sept. 27.	—	A. E.	Sept. 29.	—
W. S.	Dec. 28.	—	W. S.	Dec. 26.	—

But with respect to the mode in which they were likely to have been assumed by Hesiod himself; if his true age was B. C. 569, it was 279 years later than the third publication of the Sphere in Egypt B. C. 848, when the cardinal points were laid down in *octavis partibus;* and 229 years later than the first introduction of the doctrine of the alternate Recession and Precession of the points so laid down, both in the Sphere of Mazzaroth and in the Tropical Sphere, 50 years afterwards[1]. And the question is here, Whether Hesiod could have been ignorant of this revision of the Sphere, or of the doctrine ever after associated with it? and if not, whether he could have doubted of the truth of a theory, which, having been once broached in Egypt, passed from the Egyptians into all parts of the ancient world, and was implicitly received by the astronomers every where? We shall see, we trust, hereafter, that it was both known to, and applied by, Thales of Miletus; and Hesiod being a contemporary of Thales, and an astronomer like him, it is on every account to be presumed that the principles and assumptions of the astronomy of Hesíod were the same with those of that of Thales—and both alike ultimately resolvable into those of the astronomy of the Egyptians, of their own time and before it.

This very reasonable presumption being taken for granted, it follows that the cardinal points to which the astronomical notices, which occur in the Works and Days, were intended to be referred, must have been those of the third edition of the Tropical Sphere, as laid down B. C. 848 in *octavis partibus* of the Sphere of Mazzaroth; and from B. C. 798, fifty years later, as liable to be affected by the Recession and Precession.

The cardinal points of the Sphere of Mazzaroth were assumed originally as follows[2].

Krion 1	March 24	at noon.
Karkinon 1	June 24	—
Zygon 1	Sept. 23	—
Ægon 1	Dec. 23	—

[1] Cf. our Fasti Catholici, iii. 439–482: also our Origines Kalendariæ Italicæ, iv. 56 sqq. *note*.

[2] Fasti Catholici, iii. 304.

And being fixed and invariable of their kind, they would continue the same in terms perpetually; only that after B. C. 672 they would drop one term respectively in the Julian notation. The tropical points as adapted to these, B. C. 848, and laid down in *octavis partibus*, were assumed as follows.

The V. E.	March 31.
S. S.	July 1.
A. E.	Sept. 30.
W. S.	Dec. 30.

And these too were still falling in the same way B. C. 798: but as between B. C. 798, and the time of Hesiod, B. C. 569, these dates also would be found to have dropped one term in the Julian notation, after B. C. 672 —for the purpose of our argument at present, we may assume them as if they had originally stood as follows.

The V. E.	March 30.
S. S.	June 30.
A. E.	Sept. 29.
W. S.	Dec. 29.

These explanations having been premised, we observe next, i. That between B. C. 798, the epoch of this Sphere, as affected by the Recession and Precession, and B. C. 569, the interval was 229 years. ii. That, according to the doctrine in question, the amount of the Recession was one degree *in antecedentia* (the contrary order of the signs,) and one day in the retrograde order of the Julian notation, in 80 years: and consequently three degrees and three days in 240 years. iii. That 229 years being only eleven years less than 240, the amount of the Recession must have been assumed at three days in a work like that of the *Opera et Dies*, the rules and directions of which were intended to be perpetual, and, as founded on the natural or sidereal phenomena of the time being, would be applicable for 80 years at least to come, if the amount of the Recession, already accumulated up to the date of the Work, was assumed at three days complete; but not, if assumed at two only complete. We will therefore suppose that, in strict conformity to the theory of the Recession and the Precession, the cardinal points in the Sphere of Hesiod, for the use of his Works and Days, were laid down, and for 80 years at least were expected to stand, as follows.

Cardinal Points of the Sphere of Hesiod, B. C. 570–569.

The W. S.	December 26	B. C. 570.
V. E.	March 27	— 569.
S. S.	June 27	— —
A. E.	September 26	— —

And it is worth while to observe of this scheme as compared with that of the same things which we proposed supra, how little the cardinal points, though assumed on such principles as these, at this particular period in the decursus of the Recession, differed from the true: the winter solstice in this Sphere of Hesiod's, Dec. 26, and the vernal equinox, March 27, being absolutely the same with the truth; the summer solstice, June 27, being only two days in anticipation of it, and the autumnal equinox, Sept. 26, only three.

It follows from these premises that the date of the first of the sidereal phenomena referred to in the Works and Days, (that of the acronychal rising of Arcturus,) sixty nights and days, after the winter solstice—is to be understood of the first appearance of that star, in the evening twilight, sixty nights and days after December 26; and sixty nights and days, reckoned from sunset Dec. 26, B. C. 570, bring us to Feb. 24, at sunset, B. C. 569. The date of the first appearance of Arcturus, in the evening twilight, recognised in the Works and Days, for the latitude of Ascra, must have been the evening of February 24. Let us therefore proceed to put this to the test of calculation; and by means of our own Tables—which are abundantly competent to answer our purpose in a case like this—which concerns only the truth of a *sensible* observation.

i. Calculation of the Acronychal rising of Arcturus, for the latitude of Ascra in Bœotia, Feb. 24, B. C. 569, from the Tables of the Fasti Catholici.

i. The first thing to be determined is the mean Right Ascension of the sun, in mean sidereal time, for the meridian of Ascra, Feb. 24, at mean noon, B. C. 569.

B. C. 570.		h.	m.	s.
i. Tabular m. V. E.	March 27	21	5	24·0
	Correction + 2	0	11	31·2
True m. V. E. at Jerusalem	March 29	21	16	55·2
		−	49	9
At Ascra	March 29	20	27	46·2

B. C. 570.	h.	m.	s.	Mean Sidereal Time. h.	m.	s.
ii. March 29	20	27	46·2	0	0	0·0
Table xl	+ 15	32	13·8	+	2	33·142
March 30	12	0	0	0	2	33·142
+ 331				+ 21	44	59·813
Feb. 24	12			21	47	32·955

Mean R. A. of the sun Feb. 24 at mean noon, B. C. 569.

The next thing to be determined is the mean R. A. of Arcturus for the same day and the same meridian.

Annual variation of Arcturus in mean R. A. + 2·7335s.

Secular correction, including proper motion,

$-273{\cdot}35\text{s}.\kappa$*	$= -273{\cdot}35 \times 23{\cdot}98$	$= -6554{\cdot}933\text{s}.$
$+ \quad 0{\cdot}016\text{s}.\kappa^2$	$= + \quad 0{\cdot}016 \times 575{\cdot}0404$	$+9{\cdot}201$
		$-6545{\cdot}732$
		$-1\text{h}.\ 49\text{m}.\ 5{\cdot}732\text{s}.$

i.	h.	m.	s.
A. D. 1830. Jan. 1 (N. S.) m. n. mean R. A. of Arcturus,	14	7	54·64
Fraction of the year.			+0·495
March 8 (N. S.) Feb. 24 (O. S.) m. n.	14	7	55·135

ii. A. D. 1830. R. A. of Arcturus, Feb. 24. m. n.	14	7	55·135
−23·98 centuries	−1	49	5·732
B. C. 569 R. A. Feb. 24. m. n.	12	18	49·403

iii. B. C. 569. m. R. A. of Arcturus,

		h.	m.	s.
Feb. 24, mean noon		36	18	49·403
− m. R. A. of the sun		−21	47	32·955
Arcturus on the meridian, mean sidereal time.	February 24	14	31	16·448
Table xl.	Correction	−	2	22·738
Arcturus on the meridian mean solar time.	February 24	14	28	53·71

The next thing to be determined is the time of the rising of Arcturus before this passage of the meridian; for which we require only the latitude of Ascra, 38° 19′ 16″ N. and the declination of the star itself, Feb. 24, B. C. 569, determined as follows.

Annual variation of Arcturus in Declination,		$-18.9732''$
Secular correction,		
$+1897{\cdot}32''.\kappa$	$= +1897{\cdot}32'' \times 23{\cdot}98$	$= +45497{\cdot}7336''$
$+ \quad 11{\cdot}270''.\kappa^2$	$= + \quad 11{\cdot}270'' \times 575{\cdot}0404$	$= +\ 6480{\cdot}7053$
		$+51978{\cdot}4389$
		$+14^\circ\ 26\ \ 18{\cdot}439$

* In this formula, for which we are obliged to Professor Challis, κ is the number of centuries before or after A. D. 1830; in this instance the number of centuries between Feb. 24 (O. S.) m. n. A. D. 1830, and Feb. 24, m. n. B. C. 569: i. e. 23·98.

	°	′	″
i. A.D. 1830			
Jan. 1 (N. S.) m. n. Declination of Arcturus	20	4	17·4 N.
Fraction of the year			−3·434
March 8 (N. S.) Feb. 24, O. S. m. n.	20	4	13·966

	°	′	″
ii. A.D. 1830.			
Feb. 24, m. n. Declination of Arcturus	20	4	13·966
−23·98 C	+14	26	18·439
Feb. 24, m. n. B. C. 569.	34	30	32·405

iii. Log. of tangent of $34° \; 30' \; 32''{\cdot}405$ = 9·8372804
+ Log. of tangent of $38 \; 19 \; 16$ = 9·8978286

Log. cosine of SNA. (semi-nocturnal arch) = 9·7351090

= Log. cosine of $57° \; 5'{\cdot}131$
= 3 h. 48 m. 20·5 = 8 h. 11 m. 39·5 s.

Hence in the last place, B. C. 569,

		h.	m.	s.
Arcturus on the meridian, mean solar time,	Feb. 24	14	28	53·7
Subtract SNA.	= −	8	11	39·5
Arcturus rising	Feb. 24	6	17	14·2
Sunset by calculation, the same day, apparent time; exclusive of refraction	Feb. 24	5	21	55

Arcturus therefore, for the latitude and on the day in question, would begin to rise 55 or 56 minutes after sunset; and consequently could not fail to become visible the same day, in the evening twilight, (which was properly meant by the acronychal rising of a given star,) whatsoever may be supposed to have been the interval between its beginning to rise and its first appearance to the eye of sense; for which we may allow, if necessary, as much as 15 or 20 minutes, before the twilight could yet have expired. This calculation therefore confirms our assumption, that the phenomenon in the present instance was intended of Feb. 24, B. C. 569, in a very remarkable manner.

The next of these astronomical notices, in the order of the year, is that of the Heliacal rising of the Pleiads—described as follows[3].

> *Πληϊάδων Ἀτλαγενέων ἐπιτελλομενάων*
> *ἄρχεσθ' ἀμητοῦ· ἀρότοιο δὲ δυσομενάων.*
> *αἳ δή τοι νύκτας τε καὶ ἤματα τεσσαράκοντα*
> *κεκρύφαται· αὖτις δὲ περιπλομένου ἐνιαυτοῦ*
> *φαίνονται τὰ πρῶτα χαρασσομένοιο σιδήρου.*

3 v. 381: cf. 570, 571.

The first appearance of the Pleiads in the morning twilight is thus dated forty nights and days, after their obscuration, as the supposed regular effect of some natural cause or other; which obscuration, under the circumstances of the case, must be understood of their cosmical, in contradistinction to their heliacal, rising: at the former of which they would necessarily be invisible, being immersed in the rays of the sun; at the latter, they would rise sufficiently long before the sun, to be visible in the morning twilight. A star rises cosmically which rises at the same time as the sun; and a star rises along with the sun, when it is in conjunction with the sun; and it is in conjunction with the sun, when it has the same longitude as the sun.

Now the mean Right Ascension of *Lucida Pleiadum*, or η *Tauri*, B.C. 569, as we shall see by and by, being 1 h. 24 m. 21·15 sec. of mean sidereal time; its mean longitude must have been 21° 5′ 17·25′ : and if the mean vernal equinox, B.C. 569, is assumed March 29—the sun would attain to that longitude of 21° 5′ 17·25″, 21 days complete after March 29, i.e. April 19; but, according to the assumptions of Hesiod, the vernal equinox being two days earlier, it would be supposed to do so, 21 days after March 27, i.e. April 17. On this principle, Hesiod's date of the beginning of the obscuration of the Pleiads, by their beginning to rise with the sun, must have been sunrise, on the morning of April 17; and that of their visible appearance, (40 nights reckoned from sunset April 16, or 40 days reckoned from sunrise April 17,) a certain time in the morning, before sunrise, May 27. Such appears to be the date of this phenomenon (which was the signal for the beginning of barley-harvest), necessarily deducible from the assumptions and statements of Hesiod: May 27, B.C. 569. And there was this further circumstance to make that day remarkable this year, that it was the first of the sixth month in the Attic calendar, and consequently in that of Ascra, if the same with the Attic.

ii. *Calculation of the meridian passage, and the time of the rising, of η Tauri, May* 27, *B.C.* 569, *for the latitude of Ascra.*

B.C. 569.			h.	m.	s.
i. Tabular m. V. E.		March 27	2	54	14·4
	Correction	+2	0	11	31·2
True m. V. E. at Jerusalem		March 29	3	5	45·6
				−49	9
	at Ascra	March 29	2	16	36·6

	B.C. 569.	h.	m.	s.	Mean Sidereal Time. h.	m.	s.
ii.	March 29	2	16	36·6	0	0	0·0
		+9	43	23·4		+1	35·836
	March 29	12	0	0·0	0	1	35·836
	+58				+3	48	40·209
	May 26	12	0	0·0	3	50	16·045

m. R. A. of the sun, May 26 at mean noon, in mean sidereal time.

iii. Annual variation of η Tauri in m. R. A. $+3{\cdot}5443^s.$

Secular correction,

$-354{\cdot}43^s.\kappa = -354{\cdot}43 \times 23{\cdot}98$	$=-8499{\cdot}2314^s.$
$+ \ 0{\cdot}896^s.\kappa^2 = + \ 0{\cdot}896 \times 575{\cdot}0404$	$+ \ 515{\cdot}2362^s.$
	$-7983{\cdot}9952$
	$=-2$ h. 13 m. $3{\cdot}995^s.$

A. D. 1830.	h.	m.	s.
Jan. 1 (N. S.) m. n. m. R. A. of η Tauri	3	37	23·62
Fraction of the year			= + 1·52
June 7 (N. S.) May 26 (O. S.)	3	37	25·14
−23·98 centuries	= −2	13	3·99
May 26 m. n. B. C. 569, R. A. of η Tauri	1	24	21·15

	h.	m.	s.
iv. May 26, 12 h. B. C. 569, R. A. of η Tauri	25	24	21·15
− R. A. of the sun	−3	50	16·045
May 26, B. C. 569, η Tauri on the meridian mean sidereal time. Correction	21	34	5·105
		−3	32·005
Mean solar time May 26	21	30	33·1

v. Annual variation of η Tauri in Declination, $+11{\cdot}6902''$

Secular correction,

$-1169{\cdot}02''.\kappa = -1169{\cdot}02'' \times 23{\cdot}98$	$=-28033{\cdot}0996''$
$- \ 21{\cdot}286''.\kappa^2 = - \ 21{\cdot}286'' \times 575{\cdot}0404$	$=-12240{\cdot}3099''$
	$-40273{\cdot}4095$
	$-11^\circ\ 11'\ 13{\cdot}409''$

Jan. 1 (N. S.) m. n. Declination of η Tauri	23	34	22·0 N.
Fraction of the year			+5·16
June 8 (N. S.) May 27 (O. S.) m. n.	23	34	27·16
−23·98 C	= −11	11	13·41
May 27, m. n. B. C. 569	12	23	13·75 N.

vi. Log. tangent of $12^\circ\ 23'\ 13{\cdot}75'' = 9{\cdot}3416905$

+ Log. tangent of Latitude $= 9{\cdot}8978286$

Log. cos. SNA. $= 9{\cdot}2395191$

$=$ Log. cos. $80^\circ\ 0'{\cdot}211 = 5$h. 20m. $= (12$h. $- 5$h.$\cdot20) = 6$h. 40m.

Hence, B. C. 569,		h.	m.	sec.
η Tauri on the meridian,	May 26	21	30	33·1
		−6	40	
η Tauri rising, apparent time	May 26	14	50	33·1
	i. e. May 27	2	50	33·1
Sunrise, by calculation	May 27	4	52	57·4

apparent time, exclusive of refraction ; 2 h. 2 m. 24.3 sec. after the rising of η Tauri.

The constellation Pleiades then must have begun to rise for the latitude of Ascra about two hours before the sun, on the morning of May 27, B. C. 569; but, forasmuch as it must be supposed under any circumstances to have attained to a certain elevation above the horizon, before it could become distinguishable by the unassisted eye, and that elevation, because of the smallness of the stars of this constellation, may be assumed at 11° or 12°, it would not begin to be visible under 40 or 50 minutes after it began to rise. And that would be strictly in this present instance at the beginning of the morning twilight—the instant denoted by the heliacal rising of a star.

And as it would thus seem that Hesiod must have assumed the heliacal rising of this constellation, about an hour and twenty minutes before sunrise on this day, May 27; it is to be supposed that, on the same principle, he must have reckoned its cosmical setting (which with him was the beginning of seed time[4], as the heliacal rising was of reaping time) about an hour and twenty minutes before sunrise on some day in the opposite quarter of the year : and without going through a fresh calculation, similar to the preceding in all its steps, it is easy to determine this day by means of our Table of the Anticipation of mean Sidereal Time on mean Solar, from the calculation just concluded.

For by that we had

		h.	m.	sec.
η Tauri on the meridian,	May 26	21	30	33.1
Table xlii. 158 days		= −10	21	13.689
η Tauri on the meridian,	Oct. 31	11	9	19.4
		+6	40	
η Tauri setting	Nov. 1	5	49	19.4

And this being about an hour before sunrise this morning—the first actual disappearance of the star, to the eye of sense, on the same principle as before, at an elevation of 11° or 12° (or at this season of the year, even more,) would be about one hour and forty or fifty minutes before sunrise.

The next of these notices is the following[5].

> *Δμωσὶ δ' ἐποτρύνειν Δημήτερος ἱερὸν ἀκτὴν*
> *δινέμεν, εὖτ' ἂν πρῶτα φανῇ σθένος Ὠρίωνος,*
> *χώρῳ ἐν εὐαέϊ καὶ ἐϋτροχάλῳ ἐν ἀλωῇ—*

i. e. the Heliacal rising of the constellation Orion ; announcing the arrival of the proper time for threshing out the newly reaped grain. The constellation Orion is of such magnitude, and is composed of so many stars, and takes up so much time to rise and to set in its totality, that this note of time, at first sight, may well appear something indefinite. But the most remarkable part of this constellation is the three stars which make up the Zone or Belt ; and we have seen reason from our own observation to con-

[4] See v. 612. [5] v. 595–597.

clude that, in the popular language, the rising or the setting of Orion is always to be understood of the rising or the setting of the Belt. We will assume therefore that, by the heliacal rising in this instance, Hesiod meant that of some one or other of the stars of the Belt. And with respect to the day which he must also have had in view, though that too appears to be left indefinite, we may observe that, in the Julian calendar of later times, according to Ovid [6], this phenomenon was the date of the summer solstice, and its Roman date was vi Kal. Julias, June 26 Roman in the original Julian correction, June 24 Julian: and, what is more to our purpose at present, the same phenomenon, as we have learnt from Festus Avienus [7], was the epoch of the sidereal year of Meton, and attached to his date of the summer solstice also, June 27. The sidereal dates of the time of Meton, B. C. 432, and for the climate of Attica, on whatsoever principles they were determined, must have held good in general for the time of Hesiod, B. C. 569, and for the climate of Bœotia. We will assume therefore that Hesiod's date for this phenomenon was his date for the summer solstice; which in terms agreed with Meton's, June 27.

Calculation of the meridian passage, and the rising of ϵ Orionis, the middle star of the Ζώνη, *Cingulum, or Belt, June* 27 *B. C.* 569, *for the latitude of Ascra.*

	B. C. 569.	h.	m.	s.	Mean Sidereal Time. h.	m.	s.
i.	March 29	12	0	0	0	1	35·836
	+ 89				+ 5	50	53·424
	June 26	12	0	0	5	52	29·260

R. Ascension of the sun, in mean sidereal time, June 26 B. C. 569.

ii. Annual variation of ϵ Orionis + 3·0398s.

Secular correction,

$$-303{\cdot}98\text{s.} \times \kappa = -303{\cdot}98\text{s.} \times 23{\cdot}98 = -7289{\cdot}4404\text{s.}$$
$$+\ 0{\cdot}190\text{s.} \times \kappa^2 = +\ 0{\cdot}190\text{s.} \times 595{\cdot}0404 \quad +\ 109{\cdot}2577\text{s.}$$
$$-7180{\cdot}1827$$
$$= -1\text{h. } 59\text{m. } 40{\cdot}1827\text{s.}$$

A. D. 1830.	h.	m.	s.
Jan. 1. (N. S.) m. noon R. A. of ϵ Orionis	5	27	35·45
Fraction of the year			+ 1·56
July 8. (N. S.) June 26 (O. S.) m. noon	5	27	37·01
− 23·98 centuries	− 1	59	40·18
B. C. 569. June 26. m. noon R. A. of ϵ Orionis	3	27	56·83
− R. A. of the sun	− 5	52	29·26
E Orionis on the meridian, June 26,	21	35	27·57
mean sidereal time. Correction		− 3	32·23
Mean solar time, June 26,	21	31	55·34

[6] Fasti, vi. 785. [7] Supra, 180.

iii. Annual variation of ϵ Orionis in Declination,		$-2.8268''$
Secular correction,		
$-282{\cdot}68''.\kappa$	$=-282{\cdot}68''\times 23{\cdot}98$	$=-6778.6664''$
$-22{\cdot}016''.\kappa^2$	$=-22{\cdot}016\times 575{\cdot}0404$	$=-12660{\cdot}0894$
		$=-5°\ 23'\ 58{\cdot}7558''$

A. D. 1830. Jan. 1. (N. S.) m. noon. Declination of ϵ Orionis	1°	19′	2·1″ S.
Fraction of the year			−1·456
A. D. 1830. July 8. (N. S.) = June 26. (O. S.)	1	19	0·644
−23·98 centuries	= −5	23	58·756
B. C. 569. June 26. m. noon,	−4	4	58·112

Log. tangent of $4°\ 4'\ 58{\cdot}112'' = 8{\cdot}853\,5748$
+ Log. tangent of Latitude $9{\cdot}897\,8286$

Log. cosine of SNA. $= 8{\cdot}751\,4034$
= Log. cosine $86°\ 45'{\cdot}953 = 5$ h. 47 m. 4 sec.

Hence, B. C. 569.		h.	m.	s.
ϵ Orionis on the Meridian,	June 26	21	31	55·34
− SNA.		− 5	47	4
ϵ Orionis rising, apparent time	June 26	15	44	51·34
	= June 27	3	44	51·34
Sunrise, by calculation, about		4	38	22

apparent time, exclusive of refraction: that is, 54 minutes after ϵ Orionis would begin to rise; which would allow ten minutes, at least, after it began to rise, in order to its becoming visible to the eye.

We may observe on this date, June 27, B. C. 569, that it would be the second day of the seventh month of the calendar for the time being—the first of which fell June 26: and if we suppose it was the day recommended in this instance for beginning the process of threshing, that would appear at first sight to be inconsistent with a passage in the Days as such, which seems to prescribe for that purpose the *μέσση ἑβδομάτη*, or 17th of the month[8].

> *Μέσσῃ δ' ἑβδομάτῃ Δημήτερος ἱερὸν ἀκτὴν*
> *εὖ μάλ' ὀπιπτεύοντα ἐϋτροχάλῳ ἐν ἀλωῇ*
> *βάλλειν—*

But the truth is, what is recommended in this instance is not the threshing out of the corn, but at the utmost, only the laying it down on the barn floor, preparatory to the threshing. The word in this instance is *βάλλειν*; in the former it was *δινέμεν*. The latter properly denoted the threshing, as accompanied by the winnowing; the former strictly means only to cast or lay down, for any purpose. And in fact these several directions being compared together, and taken in conjunction, the natural inference from all is that, as Hesiod recommended the cutting of the corn

8 v. 803.

on the first of the month, May 27, so did he the carrying it from the field, and laying it in order on the barn floor, preparatory to being threshed, sixteen days after, on the 17th; and the threshing it out at last, fifteen days after that, June 27: having been dried and hardened, it may be supposed, meanwhile in the sun, and made so much the fitter for the threshing.

The last of these notices is that which defines the beginning of vintage [9]—

> *Εὖτ' ἂν δ' Ὠρίων καὶ Σείριος ἐς μέσον ἔλθῃ*
> *οὐρανὸν, Ἀρκτοῦρον δ' ἐσίδῃ ῥοδοδάκτυλος ἠὼς,*
> *ὦ Πέρσῃ τότε πάντας ἀπόδρεπε οἴκαδε βότρυς*
> *κ, τ. λ.*

of the arrival of which, we see, three distinct astronomical tokens are proposed—the heliacal rising of Arcturus, the meridian passage, or culmination, of Orion, and the meridian passage, or culmination, of Sirius—all more or less coincident and simultaneous.

The most precise and definite of these is the heliacal rising of Arcturus; with respect to which too, as we shall see hereafter, not only Hesiod in this instance, but the popular usage of speech among the Greeks in general, and even the laws of their respective communities, concurred in defining the time when the grape, though still hanging on the vine, was to be considered ripe, and the vintage ready to begin, by this phenomenon in particular. And forasmuch as the date of this phenomenon in the Parapegma of Meton and Euctemon was certainly September 16—and its date in their time, howsoever determined, must have been almost equally true of that of Hesiod—we will assume that Hesiod also made the date of this phenomenon, and that of the other two, which he supposed to have been coincident with it, September 16.

[9] 607.

i. *Calculation of the meridian passage and the time of the rising of Arcturus, for the latitude of Ascra, Sept. 16 B. C. 569.*

	B. C. 569.	h.	m.	s.		Mean Sidereal Time. h.	m.	s.
i.	March 29.	12	0	0.0		0	1	35·836
	+ 171					+ 11	14	10·961
	Sept. 16.	12		..	R. A. of the sun,	11	15	46·797

A. D. 1830.		h.	m.	s.
Jan. 1. (N. S.) m. n.	R. A. of Arcturus,	14	7	54·64
Fraction of the year				+ 2·02
Sept. 28. N. S. Sept. 16. O. S.	R. A. of Arcturus,	14	7	56·66
− 23·98 centuries		− 1	49	5·73
B. C. 569. Sept. 16. m. n.	R. A. of Arcturus,	12	18	50·93
	− R. A. of the sun,	11	15	46·79
		1	3	4·14
	Correction,			− 10·33
Arcturus, on the meridian, Sept. 16, mean solar time,		1	2	53·81
	− SNA.	− 8	11	39·5
Arcturus rising, Sept. 16, apparent time,	..	4	51	14·31
Sunrise by calculation, apparent time, ..	..	5	43	26.6

Arcturus therefore would begin to rise at least 52 or 53 minutes before the sun; and might be actually visible about 44 minutes before sunrise—and therefore strictly in the morning twilight.

ii. *Calculation of the meridian passage of ε Orionis Sept. 16 B. C. 569 for the latitude of Ascra.*

	B. C. 569.	h.	m.	s.		Mean Sidereal Time. h.	m.	s.
i.	March 29.	12	0	0·0		0	1	35·836
	+ 170					+ 11	10	14·405
	Sept. 15.	12		..	R. A. of the sun,	11	11	50·241

A. D. 1830.		h.	m.	s.
Jan. 1. N. S. m. n.	R. A. of ε Orionis,	5	27	35·45
Fraction of the year				+ 2·24
Sept. 27. N. S. = Sept. 15. O. S.		5	27	37·69
− 23·98 centuries =		− 1	59	40·18
B. C. 569. Sept. 15.	R. A. of ε Orionis,	3	27	57·51
	− R. A. of the sun,	− 11	11	50·24
Sept. 15.		16	16	7·27
Correction			− 2	39·91
ε Orionis on the meridian, Sept. 15,		16	13	27·36
mean time. = Sept. 16,		4	13	27·36

one hour and 30 minutes before sunrise, but only 38 minutes before the rising of Arcturus: so that it might truly be assumed of this day, that when ϵ Orionis, or the belt of Orion, was culminating, Arcturus would be rising in the morning twilight, and vice versa.

iii. *Calculation of the meridian passage of Sirius for the latitude of Ascra, Sept.* 16 *B.C.* 569.

Annual variation of Sirius, in R. A. $+2{\cdot}6457$s.

Secular correction,

$$-264{\cdot}57\text{s}.\kappa = -264{\cdot}57 \times 23{\cdot}98 = -6344{\cdot}3886\text{s}.$$
$$+\ 0{\cdot}061\text{s}.\kappa^2 = +\ 0{\cdot}061 \times 575{\cdot}0404 = +\ 35{\cdot}0775$$
$$-6309{\cdot}3111$$
$$= -1\text{ h. } 45\text{ m. } 9{\cdot}3111\text{ s.}$$

		h.	m.	s.
B. C. 569.				
Sept. 15. m. n.	R. A. of the sun,	11	11	50·24

		h.	m.	s.
A. D. 1830.				
Jan. 1. N. S. m. n.	R. A. of Sirius,	6	37	39·28
Fraction of the year				+ 1·95
Sept. 27 = Sept. 15.	R. A. of Sirius,	6	37	41·23
− 23·98 centuries		− 1	45	9·31
Sept. 15, B. C. 569,	R. A. of Sirius,	4	52	31·92
	− R. A. of the sun,	− 11	11	50·2
Sept. 15.		17	40	41·7
Correction			− 2	53·8
Sirius on the meridian, Sept. 15,		17	37	47·9
mean time. = Sept. 16,		5	37	47·9

only six minutes indeed before sunrise, but 46 after the beginning of Arcturus to rise, and 36 after it might first become visible, this day.

It is clear then that just at the time when Arcturus was rising or becoming visible on this day, Sept. 16 B. C. 569—both ϵ Orionis and Sirius would actually be on, or approaching to, the meridian. With respect to the day itself, it would be ten days before Hesiod's date of the autumnal equinox, Sept. 26. Now the vintage being supposed to begin on this day; the directions, prescribed for the process itself, are these [10]; First to gather and bring home the grapes on this day; and (as it is also implied by what follows) to tread them out this day. Then, to let the juice stand *ten days* and *ten nights* exposed to the air and the sun. After that, to keep it covered up *five* days: on the *sixth* day to draw it off into the vessels intended for its reception. The whole process then would last 16 days—from the 16th of September to the 1st of October, both inclusive—and these being divided into one period of ten days and another of five days—the day which discriminated between them would be critically Hesiod's date of the autumnal equinox itself. It is evident that from the beginning of the process to that day, he might consider it safe to leave

[10] v. 609–611.

ii. To this note of time taken from the appearance of Arcturus, another is subjoined, from the first appearance of the swallow [p]:

> Τόνδε μέτ' ὀρθρογόη Πανδιονὶς ὦρτο χελιδὼν
> ἐς φάος ἀνθρώποις, ἔαρος νέον ἱσταμένοιο·
> τὴν φθάμενος οἴνας περιταμνέμεν· ὣς γὰρ ἄμεινον—

with respect to which all that we need to remark is, that so far as a natural phenomenon, depending on the movements of birds, could have a fixed and stated date, Hesiod could not have considered that date either much earlier or much later

the new must open both to the air and the sun; but that after this day, he might apprehend danger, from a change of the weather, and the setting in both of cold and rain.

And this leads us to observe that according to the ἐπισημασίαι, or prognostications, of the other parapegmata of antiquity, rainy and stormy weather, as we shall see hereafter [11], was the accompaniment of the heliacal rising of Arcturus; but in Hesiod's apprehension it must have been rather that of the autumnal equinox. The period, with him, for which the sea might be tried with safety, was a term of fifty days; beginning directly after the solstice of summer [12]—

> Ἤματα πεντήκοντα μετὰ τροπὰς ἠελίοιο
> ἐς τέλος ἐλθόντος θέρεος καματώδεος ὥρης,
> ὡραῖος πέλεται θνητοῖς πλόος κ', τ. λ.

and this interval so reckoned, according to his assumptions, would begin 50 days after June 27; and consequently on August 16: i. e. just 31 days before his date of the heliacal rising of Arcturus, and just 41 days before his date of the equinox, Sept. 26. And of this interval of fine weather, and calm, and security, he recommends his mariner to take advantage—by getting to his destination, and transacting his business there, in time to return home before the equinox; which he defines as the time when the new wine would just be ready—

> Μηδὲ μένειν οἶνόν τε νέον καὶ ὀπωρινὸν ὄμβρον
> καὶ χειμῶν' ἐπιόντα Νότοιό τε δεινὰς ἀήτας,
> ὅς τ' ὤρινε θάλασσαν, ὁμαρτήσας Διὸς ὄμβρῳ
> πολλῷ ὀπωρινῷ, χαλεπὸν δέ τε πόντον ἔθηκεν.

It is probable he meant to allow his mariner fifteen days to reach his destination, beginning August 16, fifteen to transact his business, ending Sept. 15, and fifteen to get home again, by October 1; on which day, according to his directions, the new wine was to be jarred. On this principle he could have apprehended no bad weather between Sept. 16 and October 1—though after that he must have done so.

p 566.

11 Diss. iii. ch. i. sect. x. 12 661–675.

in his time than 60 days after the winter solstice *. This natural phenomenon could never in his apprehension have preceded the sidereal one just before mentioned; and if that could not happen earlier than 60 days after the solstice, neither could this. And as he specifies the appearance of the swallow at this time not as the forerunner of spring, but as an intimation that spring was already arrived, it is clear that spring in his apprehension never could have begun later than 60 days after the solstice. We have seen in fact[pp], that the date of the early spring, reckoned from the *flatus Favonii*, was not more than 45 or 46 days after it. The work too which he recommends not only from the time of this appearance of the swallow, but even before it (τὴν φθαμένος), is the pruning of the vine; and by parity of reason any other description of garden trees, which were naturally as forward as the vine: that is, the appearance of the swallow in his calendar was a token that the proper season of the φυταλιὰ had already set in; and therefore ought to have been already applied to its proper purposes, even before the return of the swallow.

iii. The sidereal criterion of the ripeness of the harvest, (barley harvest,) was the heliacal rising of the Pleiads[q]. Mr. Ideler, on the same hypothesis of the age of Hesiod, calculated this to May 19—which, for the lower epoch of B.C. 569, would require to be corrected by May 20; and that would agree to the usual season of barley harvest in Hesiod's time and for this part of Greece[r]. Between the cosmical rising of this constellation and the heliacal, Hesiod supposed an interval of 40 days[s]; which Mr. Ideler considers to have

* The Hirundinis Adventus is an equally important date in all the Parapegmata of antiquity: and in most of them it seems to have been assumed relatively to the winter solstice, and to the other phenomenon of the rising of Arcturus, within the limits originally defined by Hesiod—seldom less than 60 days after the solstice for the time being—by Ovid (Fasti), Feb. 24 = 22: by Pliny, Feb. 22 = 23: by Columella, Feb. 23 = 24: by Euctemon and Callippus, in Geminus, Feb. 23, 60 days after their date of the solstice, Dec. 25: by Eudoxus, Feb. 25, 59 days after his date of the solstice, Dec. 28: by the same authorities, or others in Ptolemy, Feb. 22, 23, 24, which last was the date assigned it by Metrodorus.

pp Supra, 139.
q 381–385: cf. 569–573.
r Cf. supra, 144 sqq.
s v. 383.

been five days in defect; determining the former himself to April 4 as he does the latter to May 19; and these dates B. C. 569 would answer to April 5 and May 20 respectively. But on this subject see the note p. 275.

The proper time for threshing out the corn was the heliacal rising of Orion[t]; July 9 according to Mr. Ideler, July 10 as we should assume it. The beginning of the vintage season was the heliacal rising of Arcturus[v], Sept. 18 according to Mr. Ideler; the season itself lasting 16 days. Ploughing and sowing time was the cosmical setting of the Pleiads[x], Nov. 3 for B. C. 800, Nov. 4 for B. C. 569. The same phenomenon was the token of the beginning of winter, and of the shutting of the sea[y]. The proper season for the felling of timber was that of the fall of the leaf[z]. The close of the summer (or *ὥρα*) was 50 days after the solstice[a]; and the mean summer solstice, B. C. 569, falling June 28, the true June 29, that would be either August 17 or 18: and this should have been also the date of the *φθινόπωρον* of Hesiod, had that division of the natural year been distinctly specified by him. But though both the epithet *ὀπωρινὸς* and that of *μετοπωρινὸς* occur in him[b], neither *ὀπώρα*, nor *φθινόπωρον*, nor *μετόπωρον*, does so. Nor does he specify the *θέρους ἀρχὴ*—though it may be inferred from the Scutum[c] and the Works and Days[d], that he considered the *ἀκμὴ* of that season coincident with the time when the tettix had begun to sing, the grapes of the vine to change their colour, and Sirius was in the ascendant: notes these, of the season of the opora, but as already some time set in. We may conclude then that he could not have been ignorant of the *ὀπώρα*, as one of the divisions of the year; though he has not had occasion to mention its name. And this must be added to the other arguments of the lateness of his æra in comparison of that of Homer; viz. that the divisions of the year in his time had already acquired a more formal and circumstantial character than in the time of Homer—almost all which are recognised in the calendars of later times, down to the Julian correction, being actually or virtually found in these of Hesiod*.

* The greatest division of the natural year, which appears to have been

[t] v. 595. [v] v. 607: cf. 671, 672. [x] 612 sqq. [y] v. 616.
[z] 412—420. [a] 661. [b] 672: 675: 413. [c] 393—401. [d] 580—594.

made by the ancient Greeks, was a sevenfold one. The precise time when it was introduced, it may not be possible at present to determine. All that we can predicate of it is that it was already in existence and recognised in the time of Hippocrates; who nevertheless was not the first author of it. This appears, if not from the testimony of his own works, yet from repeated statements in those of Galen. Some of these we will subjoin.

i. *Καὶ ὅσοι τὸν ἐνιαυτὸν εἰς ζ' τέμνουσιν ὥρας, ἄχρι μὲν ἐπιτολῆς τοῦ Κυνὸς ἐκτείνουσι τὸ θέρος, ἐντεῦθεν δὲ μέχρις Ἀρκτούρου τὴν ὀπώραν. οἱ δ' αὐτοὶ καὶ τὸν χειμῶνα τριχῇ τέμνουσι, μέσον μὲν αὐτοῦ ποιοῦντες τὸν περὶ τὰς τροπὰς χρόνον, τοὺς δ' ἑκατέρωθεν τοῦδε, σπορητὸν μὲν πρόσθεν φυταλιὰν δὲ τὸν ἕτερον . . . . καὶ μέντοι κἀν τῷ περὶ ἑβδομάδων Ἱπποκράτους ἐπιγραφομένῳ βιβλίῳ διῃρημένον ἐστὶν εὑρεῖν τὸν ἐνιαυτὸν εἰς ἑπτὰ, τοῦ μὲν φθινοπώρου καὶ τοῦ ἦρος ἀτμήτων πεφυλαγμένων, τετμημένων δὲ τοῦ μὲν χειμῶνος εἰς τρία μέρη τοῦ δὲ θέρους εἰς δύο*[1]. It thus appears that Hippocrates made a sevenfold division of the whole year, one of the spring, one of the autumn, two of the summer, and three of the winter. And though the epochs or dates of those divisions are not here given, other passages supply that omission.

ii. *Ἡ δὲ τῶν ὡρῶν τούτων τομὴ ἐκ τοῦ κατὰ ταύτας χρόνου. τεσσάρων γὰρ μηνῶν ὁ μεταξὺ Πλειάδος τε (ἐπιτολῆς* sc.) *καὶ Ἀρκτούρου χρόνος ἐστί. πλειόνων δὴ καὶ τεσσάρων ὁ μεταξὺ Πλειάδος δύσεως καὶ τῆς ἐαρινῆς ἰσημερίας· ὁ δὲ τοῦ ἦρος οὐδ' ὅλων δύο μηνῶν, ὥστ' ἄτμητος εἰκότως ἐφυλάχθη. διὰ ταῦτα δὲ καὶ τοῦ φθινοπώρου μείζων μὲν ἀεὶ ὁ χρόνος* (*ita leg.*) *ἢ παρὰ τὸ ἔαρ. ἐκτείνεται γὰρ εἰς δύο μῆνας· ἀπολειπόμενος δὲ τῷ μεγέθει παμπολὺ* (*τοῦ*) *κατὰ τὸ θέρος τε καὶ τὸν χειμῶνα χρόνου*[2].

iii. *Ὃ δὲ προστίθησιν αὐτὸς ἐν ταῖς ὀπώραις, ἀντίκειται τοῖς ἐν τῷ χειμῶνι λεγομένοις . . . . εἰ μὴ ὀπώραν λέγει τὸ μέσον θέρους, ὅπερ οἱ Ἕλληνες ὥραν ὀνομάζουσιν. ἐπιφέρουσι δὲ καὶ τὸ τῆς ὥρας ὄνομα τῷ φθινοπώρῳ καὶ χειμῶνι καὶ ἦρι· κατ' ἐξοχὴν δὲ ὥραν ἔτους καλοῦσιν ἐκεῖνον τὸν καιρὸν καθ' ὃν οἱ καρποὶ οὓς ὡραίους καλοῦσι τελειοῦνται. ἡ δὲ τῶν ὡρῶν τάξις, ὡς αὐτός τε πολλάκις διὰ τῶν Ἐπιδημιῶν, οἵ τ' ἄριστοι τῶν περὶ τὰ τοιαῦτα δεινῶν ἐγράψαν, ἥδε ἐστίν· Ἐπιτολὴ Πλειάδος ἀρχὴ θέρους ἐστί· μεθ' ἣν Κυνὸς ἐπιτολὴ τῆς καλουμένης ὀπώρας, ἣν δὴ καὶ αὐτὴν τὸ δεύτερον μέρος τοῦ θέρους τίθενται ἔνιοι. μεθ' ἣν Ἀρκτοῦρος ἐπιτέλλων ἀρχὴν ποιεῖται φθινοπώρου· κἄπειτα δύσις Πλειάδων χειμῶνος ἀρχὴ γίνεται. εἶτα μετὰ τὸν χειμῶνα ἰσημερία τὴν ἀρχὴν τοῦ ἦρος ἔχει· ἐν ὀπώραις οὖν ἡλιώσεις καὶ οἶνοι*[3].

iv. *Δυοῖν γὰρ οὐσῶν ἰσημεριῶν καὶ δυοῖν Πλειάδων ἐπισημασιῶν . . . κατὰ . . . τὸ ἔαρ ἡ ἑτέρα γίνεται, καὶ ἡ ἀρχὴ αὐτοῦ* (*τοῦ ἦρος*) *. . . ἐστὶν αὕτη, καθάπερ καὶ τελευτὴ* (*πᾶσα*) *ὑπὸ τῶν* (*τὴν*) *Πλειάδων ἐπιτολήν· κατὰ δὲ τὸ φθινόπωρον ἡ ὑπόλοιπος ἰσημερία γίνεται καὶ ἡ τῶν Πλειάδων δύσις*[4]—*Αὐτίκα γέ τοι κατὰ τὸν τῆς Ἑλλησπόντου παράλληλον, ἀρχὴ μὲν τοῦ ἦρός ἐστιν ἡ κατ' ἐκεῖνον τὸν καιρὸν ἰσημερία, τελευτὴ δὲ τῶν Πλειάδων ἡ ἐπιτολή. αὕτη δὲ καὶ θέρους*

1 Opera, xvii. P. I. 17. 15—18. 7.

2 Opp. xvii. P. i. 19. 5–13: cf. p. 29. last line—30. 11 p. 86. 8 sqq. 87. 8–11.

3 xvi. 432. 11–433. in Hippocr. περὶ χυμῶν, iii. 19: cf. xvii. P. ii. 598. 16–599. Comment. in Ἀφορισμοὺς, where the same statements are repeated almost in the same words: also xvi. 383. 13–384. 7. in Hippocr. περὶ χυμῶν iii. 11.

4 xvii. P. i. 15. 6. Ἐπιδημ. i. 1.

ἐστὶν ἀρχὴ . . . ἀρχὴ δὲ τοῦ φθινοπώρου ἡ ἐπιτολὴ τοῦ Ἀρκτούρου, προλαμβάνουσα τὴν φθινοπωρινὴν ἰσημερίαν ἡμέραις ὡς δώδεκα. καὶ μέν γε καὶ ἡ δύσις τῆς Πλειάδος ἀρχὴ μὲν τοῦ χειμῶνός ἐστι τελευτὴ δὲ τοῦ φθινοπώρου [5]—Ὅτι τῆς Πλειάδος ἡ δύσις ὁρίζει φθινόπωρον εἴρηται πρόσθεν· ἀλλὰ καὶ ὅτι δύο μῆνές εἰσιν ἀπ' Ἀρκτούρου μέχρι Πλειάδος . . . τοῦ δ' Ἀρκτούρου τῆς ἐπιτολῆς μόνης οὐδὲ μνημονεύειν εἴωθεν Ἱπποκράτης, ἐπειδὴ κατ' αὐτὸν ἀρχὴ μὲν γίνεται τοῦ φθινοπώρου τελευτὴ δὲ τοῦ θέρους, εἴρηται δ' ἔμπροσθεν ἤδη περί τε τῆς εἰς τὰς δ' ὥρας διαιρέσεως ὅλου τοῦ ἐνιαυτοῦ, καὶ περὶ τῆς εἰς ἑπτὰ, καὶ ὅτι θέρος μὲν ὁρίζουσιν ἐπιτολῇ Πλειάδος καὶ Ἀρκτούρου[6] κ', τ. λ.

v. Θαυμάζειν δ', οἶμαι, δεῖ, καὶ ζητεῖν τὴν αἰτίαν τοῦ παραλελεῖφθαι κατὰ τὸν λόγον ἐπιτολὴν ἀστέρος τοῦ ἐπισημοτάτου, γινομένην ἐν θέρει, τοῦ καλουμένου Σειρίου· ὀνομάζουσι δὲ αὐτὸν ἔνιοι καὶ Κύνα, καταχρώμενοι τῇ τοῦ παντὸς ἄστρου προσηγορίᾳ. Κύων μὲν γὰρ τὸ σύμπαν ἄστρον, ὁ δ' ἐπὶ τῆς γέννυος αὐτοῦ Σείριος, ὃν ὀρθῶς ἄν τις ὀνομάζοι τὸν Πρόκυνα, οὐ τὸν Κύνα· καὶ ἀρχή γε τῆς καλουμένης ὀπώρας ἡ ἐπιτολὴ τούτου τοῦ ἀστέρος ἐστί[7]—Ὡραῖον δὲ ἐγχωρεῖ μὲν. . . . μόνον οὕτως ὀνομάζειν τὸ κατὰ τὸ μέσον θέρος ὀνομαζόμενον· ἐπειδὴ μάλιστα τὸν καιρὸν τοῦτον ὥραν ἔτους ὀνομάζουσιν οἱ Ἕλληνες. ἐπιφέρουσι μὲν γὰρ τὸ τῆς ὥρας ὄνομα καὶ φθινοπώρῳ καὶ χειμῶνι καὶ ἦρι· κατ' ἐξοχὴν δὲ ἐνίοτε καλοῦσιν ὥραν ἔτους ἐκεῖνον τὸν καιρὸν ἐν ᾧ τοὺς ὡραίους ὀνομαζομένους καρποὺς τελειοῦσθαι συμβαίνει [8]—Ὁ τοίνυν ταῦτα μαθὼν εἰ προσεπιμάθῃ τὸν μὲν Ἀρκτοῦρον ἐπιτέλλοντα πρὸ ἡμερῶν ὡς ιβ' τῆς φθινοπωρινῆς ἰσημερίας, Πλειάδας δὲ δῦναι ὡς μετὰ ἡμέρας πεντήκοντα κ', τ. λ[9].

The seven divisions then, recognised by Hippocrates, were spring, dated with the vernal equinox; summer, with the heliacal rising of the Pleiads; opora, with the heliacal rising of Sirius; autumn, with the heliacal rising of Arcturus; seed-time, or σπορητὸς, with the cosmical setting of the Pleiads; winter, with the winter solstice; and planting-time, or φυταλιὰ, dated, as we may suppose, with the acronychal rising of Arcturus. Mr. Ideler, assuming his time circa B. C. 430, has calculated the Julian dates of these different epochs as follows [10]:

i.	Spring, or Ἔαρ	March 26, the Vernal equinox.
ii.	Summer, or Θέρος ..	May 21, Heliacal rising of Pleiades.
iii.	Ὀπώρα, or ὥρα	July 28, Heliacal rising of Sirius.
iv.	Autumn, Φθινόπωρον, or Μετόπωρον	Sept. 21, Heliacal rising of Arcturus.
v.	Seed-time, or Σπορητός ..	Nov. 5, Cosmical setting of Pleiades.
vi.	Winter, or Χειμών ..	Dec. 26, Winter solstice.
vii.	Planting-time, or Φυταλιά	Feb. 27, Acronychal rising of Arcturus.

5 Ibid. 16. last line—17. 7.

6 xvii. P. i. 86. 8. in Epidem. ii. 2: cf. 87. 8–11.

7 Opp. xvii. P. i. 17. 8–15. in Epidem. i. 1.

8 Ibid. P. ii. 184. 6. in Epidem. vi. Comm. iv. 19.

9 xvii. P. i. 21. 11–15: cf. 24. 9: 85. 14—87. 11: 654. 6–8.

10 Technical Chronology, i. 252.

Divisions, the same as these, are recognised in the *Διαιτητικὸς τρίτος*, ascribed to Hippocrates; and though not truly his, nevertheless of nearly the same antiquity as any of his most genuine productions. But we shall say nothing of this work here; because we may have occasion to refer to it hereafter: when too we hope to point out the source of those divisions, peculiar to it. It may however be observed, by the way, that as the fourth of these divisions (reckoned from spring) is the *φθινόπωρον* or *μετόπωρον*; the division in general is virtually recognised in the following passage of Ælian, which speaks of the autumn as the *fourth* season absolutely: *Φιλεῖ δ' ἄρα* (sc. *ὁ Ἴστρος*) *δρᾶν τοῦτο, ἤδη τετάρτης ὥρας φθινοπωρινῆς παραδραμούσης, ὑπαρχομένης δὲ τῆς χειμερίου, καὶ ἀκμάσας αὐτὸς πρόεισι πλημμυρῶν κ᾽, τ. λ.*

It is also to be observed, that an epistle ascribed to Hippocrates, prescribing rules of diet throughout the year, has long been known of in the Latin version by Bede[12], wherein Hippocrates is described as Ἀρχίατρος, and as writing in that capacity to Antigonus, king of Macedonia. The same epistle has been published in Greek, in the Analecta of Boissonade[13]; and there it is headed, *Ἱπποκράτης* Κῶος Πτολεμαίῳ *βασιλεῖ χαίρειν*. It recognises six divisions of the year, beginning with the Πλειάδος *δύσις*, 49 days before the winter solstice—which it dates Dec. 31—and that gives the first and cardinal date (that of the Pleiadum occasus) Nov. 12. From this we obtain the rest, as follows:

		Days.	
i.	*Ἀπὸ Πλειάδος δύσεως μεχρὶ τροπῶν χειμερινῶν*	49.	Nov. 12–Dec. 31.
ii.	*Ἀπὸ δὲ τροπῶν χειμερινῶν ἕως ἰσημερίας ἐαρινῆς*	84.	Dec. 31–Mar. 25.
iii.	*Ἀπὸ δὲ ἰσημερίας ἐαρινῆς ἕως Πλειάδος ἀνατολῆς*	49.	Mar. 25–May 13.
iv.	*Ἀπὸ δὲ Πλειάδος ἀνατολῆς ἕως τροπῶν θερινῶν*	42.	May 13–June 24.
v.	*Ἀπὸ δὲ τροπῶν θερινῶν ἕως ἰσημερίας μετοπωρινῆς*	93.	June 24–Sept. 25.
vi.	*Ἀπὸ δὲ ἰσημερίας μετοπωρινῆς ἕως Πλειάδος δύσεως*	48.	Sept. 25–Nov. 12.

These divisions, in all but the date of the winter solstice, are such as would agree to the dates of the cardinal points in the Roman correction of the Dictator Cæsar. It is manifest that they are not the classical divisions of the same kind; nor those of Hippocrates, which we have just been considering.

To return to the subject of these divisions. It is not easy, as we have observed, to say when they must have been first made, or by whom: and

[11] De Animalibus, xiv. 26.
[12] Opp. ii. 119. De Temporum Ratione, 28. [13] iii. 422.

yet the opinion, which should ascribe them ultimately to Hesiod, would perhaps be as probable as any. All seven, at least, beginning with the *σπορητὸς* or *Πλειάδων δύσις*, might have been obtained from the Works and Days. The *φυταλιὰ* indeed in Hesiod is dated after the acronychal rising of Arcturus; i. e. with the appearance of the swallow, some few days later: but his *φυταλιὰ*, it should be observed, is the proper time for pruning the vine, after the winter. The *φυταλιὰ* absolutely, even in his scheme, might have begun with the rising of Arcturus. It is evident also that though Galen says the spring, in the division of Hippocrates, was left *ἄτμητος*, it was in reality divided into one period before the vernal equinox, and one period after it; the former from the rising of Arcturus to the vernal equinox, the latter from the vernal equinox to the rising of the Pleiades. This latter period was the spring of Hippocrates; and this certainly was left undivided in all schemes of the kind: and it might also be truly described as something less than two months long. But of spring, in the most general sense of the term, there was a triple division—which appears in the *Διαιτητικὸς* above referred to—i. From the Flatus Favonii to the rising of Arcturus and the appearance of the swallow: ii. From thence to the vernal equinox: iii. From the vernal equinox to the rising of the Pleiads—spring in its limited sense. The Flatus Favonii, as an epoch in the natural year, is recognised by Hippocrates himself.

In the Homeric writings (the genuine ones at least) no divisions occur except those of the *χειμὼν*, the *ἔαρ*, the *θέρος*—and the *ὀπώρα*—as part of the *θέρος*. In the remains of the lyric poet Alcman, (one of the most ancient of whom any fragments have been preserved [14],) the four seasons, spring, summer, opora, and winter, occur, but not the *φθινόπωρον* or *μετόπωρον*.

Οἷον ὁ παμφάγος Ἀλκμὰν
ἠράσθη χλιερὸν πέδα τὰς τροπάς.....

κἂν τῷ πέμπτῳ δὲ ἐμφανίζει αὑτοῦ τὸ ἀδηφάγον, λέγων οὕτως·

Ὥρας δ᾽ ἔσηκε τρεῖς, θέρος
καὶ χεῖμα κὠπώραν τρίταν
καὶ τέτρατον τὸ ἦρ, ὅκα
σάλλει μὲν ἐσθίεν δ᾽ ἅδαν
οὐκ ἔντι [15].

And this is an argument that Hesiod was younger than Alcman; a much more formal and complete division of the same subject matter being discoverable in him. Of course the philosophical division appears to have been always the same among the Greeks as every where else; viz. that of spring, summer, autumn, and winter—the four seasons, or four quarters, and no more. Thus, Chrysippus: *Ἔαρ δὲ ἔτους ὥραν κεκραμένην ἐκ χειμῶνος ἀπολήγοντος καὶ θέρους ἀρχομένου, ἢ τὴν μετὰ χειμῶνα ὥραν πρὸ θέρους. θέρος δὲ ὥραν τὴν μάλιστ᾽ ἀφ᾽ ἡλίου διακεκαυμένην. μετόπωρον δὲ ὥραν ἔτους τὴν μετὰ θέρος μὲν πρὸ χειμῶνος δὲ κεκραμένην. χειμῶνα δὲ ὥραν ἔτους τὴν μάλιστα κατεψυγμένην ... γίνεσθαι δὲ ἰσημερίας δύο καθ᾽ ἕκαστον ἐνιαυτὸν καὶ*

14 Cf. the Fasti of Mr. Clinton, B. C. 671–644.

15 Athenaeus, x. 10.

τροπὰς δύο. ἰσημερίας μὲν ὅταν ἡ νὺξ καὶ ἡ ἡμέρα ἶσαι ὦσι. τούτων δὲ τὴν μὲν ἔαρι γίγνεσθαι τὴν δὲ μετοπώρῳ. τῶν δὲ τροπῶν τὰς μὲν θέρους τὰς δὲ χειμῶνος [16]. And these are the only divisions of the year recognised by Callimachus, in the Hymn to Demeter.

> Χ' ὡς αἱ τὸν κάλαθον λευκότριχες ἵπποι ἄγοντι
> τέσσαρες· ὣς ἀμῖν μεγάλα θεὸς εὐρυάνασσα
> λευκὸν ἔαρ λευκὸν δὲ θέρος καὶ χεῖμα φέροισα
> ἥξει καὶ φθινόπωρον· ἔτος δ' εἰς ἄλλο φυλάξει [17].

With respect to the etymology of these terms, ἔαρ, θέρος, χειμὼν, it would be better to consider them as simple terms than to assign them any verbal explanation, as some of the grammarians of antiquity have done. Τὰς ὥρας τοῦ ἔτους ἀπὸ τῶν καρπῶν ὀνομάζουσι. θέρος οὖν ὅτε θερίζεται ὁ πυρός· ὀπῶραι ὅτε τρυγᾶται ἡ ὀπώρα. τὸ δὲ μετὰ ταῦτα μετόπωρον [18]. Μετόπωρον indeed and Φθινόπωρον explain themselves; but only as the names of the period after the opora, or of the wane and decline of the opora. Μετόπωρον· τὸ φθινόπωρον, ὁ μετὰ τὴν ὀπώραν καιρός [19]—Τὸ δὲ μετόπωρον, ὡς αὐτό που δηλοῖ τοὔνομα, καιρὸς ὁ μετὰ τὴν ὀπώραν ἐστὶν, ἤδη συγκεκομισμένην [20]—Καὶ φθινόπωρον, παρὰ τὸ φθίνειν τὴν ὀπώραν ἐν τῷ αὐτῷ [21]. And though these two terms are often used indiscriminately, a distinction, suggested and confirmed by the etymology of each, is to be drawn between them; viz. that φθινόπωρον properly denoted the interval from the end of the opora to the autumnal equinox, during which the opora, in the sense of the summer generally, was not yet over, but was on the wane; μετόπωρον was properly the period from the autumnal equinox to the Πλειάδων δύσις; that is, from the end of the opora, in the most general sense of the end of summer, to the beginning of winter *. The only one of these terms, which it would not be proper to consider a simple one of its kind †, is ὀπώρα. Ὀπώρα is evidently a compound word;

16 Apud Stobæum, Eclogæ Physicæ, i. 260. ix. 42.

17 v. 121. Cf. Oppian Halieutica, i. 585:

> Ἄλλος δ' ἀλλοίῃ λεχέων ἱμείρεται ὥρῃ,
> καὶ γενεὴν προφέρει τοῖς μὲν θέρος, οἷσι δὲ χεῖμα,
> τοῖς δ' ἔαρ ἢ φθινύθουσα τόκον προὔφηνεν ὀπώρη.

Cf. also v. 630.

18 Etym. M. in Μετόπωρον.

19 Suidas in voce. Cf. Hesychius, Μετόπωρον, and Μεθόπωρον.

20 Philo Jud. ii. 297. 26. De Septenario et Festis.

21 Etym. M. Φθισήνωρ.

* Hesychius has a singular gloss, as his text stands at present, on φθινόπωρον—which makes it extend from August 15 or 22 to December 15 or 22. But his text should be corrected by reading September for December; and then it will assign only the ordinary limits, or not much more than the ordinary limits, of the φθινόπωρον—in the sense explained above. Φθινόπωρον· ὁ ἀπὸ τῆς πεντεκαιδεκάτης Αὐγούστου μηνὸς ἕως τῆς πεντεκαιδεκάτης Δεκεμβρίου. οἱ δὲ ἀπὸ τῆς εἰκοστῆς δευτέρας Αὐγούστου ἕως πάλιν εἰκοστῆς δευτέρας Δεκεμβρίου.

† We would not however be understood to say that neither ἦρ or ἔαρ nor χειμὼν or θέρος might not admit of being etymologically explained—were it worth the while to enter on any such explanation. With respect to ἦρ in particular, we beg to refer the reader to our Fasti Catholici, ii. 110; and the Introduction to the Tables of

the two elements of which are *ὄπος* and *ὥρα*; though the ancient grammarians do not so explain it[22]. But Galen told us the name of *ὀπώρα* was given to the season of the *καρποὶ ὡραῖοι*, the *καρποὶ τῆς ὥρας*; *ὀπώρα* was both the season of such fruits and such fruits themselves; which began to ripen, and arrived at maturity, in this *ὥρα* or *ὀπώρα* itself[23]. *Ὀπώρα ἐστὶ κυρίως τὸ θέρος· ἐν τούτῳ γὰρ αἱ ὀπῶραι τῇ τοῦ ἡλίου σφοδρᾷ ἀκτῖνι πεπαίνονται*[24]—*Ὀπώρα τὸ θέρος καὶ τὸ μετόπωρον· κυρίως δὲ ἡ σταφυλή· καταχρηστικῶς δὲ καὶ ἐπὶ τῶν ἄλλων ἀκροδρύων*[25]—*Ὀπωρινὸν δεός, τὰ ἐν ταῖς ὀπώραις φόβητρα*[26]—Scarecrows, set up in the midst of the *ὀπῶραι*—*Πρώτη γὰρ ἐκείνη γέννησίς ἐστιν οἴνου, ἡ κατὰ πέπανσιν τῆς ὀπώρας, ἥτις γίνεται τῶν καυμάτων ἀκμαζόντων*[27] *κ᾽, τ. λ.*—

Πάντ᾽ ὦσδεν θέρεος μάλα πίονος ὦσδε δ᾽ ὀπώρας[28]—

The *ὀπώρα* was therefore the season of summer fruits; and such fruits are distinguished by the common property of being soft and juicy, fleshy or pulpy, in contradistinction to those which are covered with a crust or shell. It was consequently, *κατ᾽ ἐξοχὴν*, the season *τῶν ὄπων*, the *succorum tempestas*, the season of juices, that is, juicy fruits: *Ὀπώρα λέγεται ἡ χλοώδη τὸν καρπὸν ἔχουσα, οἷον δωρακινὰ, μῆλα, ἀππίδεια, δαμάσκηνα, καὶ ὅσα μὴ ἔχει ἔξωθέν τι ξυλῶδες. ἀκρόδρυα δὲ καλεῖται ὅσα ἔξωθεν κέλυφος ἔχει, οἷον ῥοιὰ, πιστάκια, κάστανα, καὶ ὅσα ξυλώδη τὸν καρπὸν ἔξωθεν ἔχει*[29]— *Σημείωσον· ὅτι Ὀρφεὺς ἀκρόδρυα πᾶσαν ὀπώραν καλεῖ. Γαληνὸς δὲ καὶ οἱ τὰ φυτουργικὰ συνταξάμενοι ἀκρόδρυά φασι τὰ σκέπην ἔχοντα, οἷον ῥοιὰς, κάρυα, ἀμυγδάλας, καὶ εἴ τι ὅμοιον. ὀπώρας δὲ τὰ ἀσκεπῆ, ὡς μῆλα, ἀπίους, καὶ τὰ ὅμοια*[30] *κ᾽, τ. λ.* In the epigram on the tomb of Phytalus, on the way to Eleusis, Demeter was said to have first given the fig-tree to him;

Ὅτε πρῶτον ὀπώρας καρπὸν ἔφηνεν,
ἣν ἱερὰν συκῆν θνητῶν γένος ἐξονομάζει[31]—

Τὸν φιλοπωριστὴν Δημόκριτον ἤν που ἐφεύρῃς,
ὤνθρωπ᾽, ἄγγειλον τοῦτο τὸ κοῦφον ἔπος.

the Fasti, pag. 2 and 3. In our opinion it is far from improbable that this word *ἔαρ* or *ἦρ* in Greek was derived from *ἔρα*, terra in Latin, earth in English, arets in Hebrew—with no other change than the transposition of the middle letter to the end; and that *ἔρα* denoting the earth, *ἔαρ* or *ἦρ* denoted the *year* of the earth. And that being dated first and properly from the vernal equinox, in the Greek, and in the Latin, this word, *ἔαρ* or *ἦρ* or *ver*, came to denote the spring—though in the languages of the north the corresponding word, *year*, &c. never denoted any thing but the "year."

22 See the Etym. M. *ὄπος*, yet cf. Eustath. ad Il. E. 902. 619. 42.

23 Cf. Pliny also, H. N. xi. 14. p. 254.

24 Schol. ad Theocrit. Idyll. xi. 37.

25 Hesychius, in voce.

26 Ibid. in voce.

27 Phurnutus, 30. De Baccho.

28 Theocritus, Idyl. vi. 143.

29 Geoponica, x. 74: Democritus. cf. 73.

30 Anecdota Græca Oxon. iii. 357: Schol. in Tzetz. Chil. iv. 175.

31 Pausanias, i. xxxvii. 2.

ὡς ἡ λευκοόπωρις ἐγὼ καὶ ἐφώριος ἤδη
κείνῳ συκοφορῶ τοὺς ἀπύρους ἀκόλους.
σπευσάτω, οὐκ ὀχυρὴν γὰρ ἔχω στάσιν, εἴπερ ὀπώρην
ἀχράντου χρῄζει δρέψαι ἀπ' ἀκρέμονος [32].

These distinctions of times and seasons, indeed, are not always seen to be attended to even in the classical writers, and at a time when they must have been well understood. Euripides, in one of his plays, made the summer and winter each four months long, the opora two, and the spring two: Εἰ δ' ὀρθῶς Εὐριπίδης θέρους τέσσαρας μῆνας καὶ χειμῶνος ἴσους·

φίλης τ' ὀπώρας διπτύχους ἦρός τ' ἴσους·

ἐν τῷ διὰ πασῶν αἱ ὧραι μεταβάλλουσιν [33]—In the Œdipus Tyrannus, winter is supposed to set in with the heliacal rising of Arcturus, and summer to have lasted three months previously—

Τρεῖς ὅλους
ἐξ ἦρος εἰς Ἀρκτοῦρον ἐμμήνους χρόνους.
χειμῶνι δ' ἤδη τἀμά τ' εἰς ἔπαυλ' ἐγὼ
ἤλαυνον, οὗτός τ' εἰς τὰ Λαΐου σταθμά [34]—

Ὁ γὰρ Ἀρκτοῦρος κατὰ τὴν ἀρχὴν ἐπιτέλλει τοῦ μετοπώρου [35]—Ἀρκτοῦρον· τὴν ἑῴαν ἐπιτολὴν ποιούμενον· ποιεῖ δὲ ταύτην ἡλίου ὄντος ἐν παρθένῳ.

In Aristophanes three seasons only are distinctly mentioned; the natural criteria of which were the appearances of such and such birds.

Πρῶτα μὲν ὥρας φαίνομεν ἡμεῖς ἦρος χειμῶνος ὀπώρας·
σπείρειν μὲν ὅταν γέρανος κρώζουσ' ἐς τὴν Λιβύην μεταχωρῇ·
.. ..
ἰκτῖνος δ' αὖ μετὰ ταῦτα φανεὶς ἑτέραν ὥραν ἀποφαίνει,
ἡνίκα πεκτεῖν ὥρα προβάτων πόκον ἠρινόν, εἶτα χελιδών,
ὅτε χρὴ χλαῖναν πωλεῖν ἤδη καὶ ληδάριόν τι πρίασθαι [36]—

And here the appearance of the ἰκτῖνος, milvus, or kite, is supposed to have been earlier than that of the swallow; which however must not be literally so understood. The hirundinis adventus was one of the tokens of the early spring; that of the kite was the signal of sheepshearing in Greece, which neither there nor any where else was an operation of the early spring: Ἐν Ἑλλάδι καιρῷ ἔαρος φαίνεται ἰκτῖνος, ὅτε κουρεύεται τὰ θρέμματα [37]. The milvi adventus is almost as noted an epoch in the parapegmata of antiquity as that of the hirundo; but always proportionally later: in Geminus, March 10, 15, and 23; in Ptolemy, March 9, 10, 14, 18, 21, and 22; in Pliny, March 9, and 18.

The date of the ὀπώρα of Aristophanes is not here specified. It may be collected however from the Pax, that it coincided with the time when the τέττιξ, on the one hand, began to sing, and the early grape, on the other,

32 Anthologia, i. 165: Leonidæ Tarentini xlv.
33 Plutarch, De Animarum Procreat. xxxi.
34 v. 1136.
35 Schol. in loc.
36 Aves, 709. cf. 500, 501.
37 Schol. in loc.

SECTION IX.—*On the extant Testimonies to the time of Hesiod.*

The age of Homer and Hesiod respectively, and the question which was the older of the two, were as doubtful and as much debated anciently as at present; or rather the controversies which have been raised on these points in modern times are only a continuation of those of antiquity. Some of the ancients, seeing no end of such disputes, decried or declined them as unavailing and useless. Seneca, for example, observes [c]: Hoc quidem me quærere utrum major ætate fuerit Homerus an Hesiodus non magis ad rem pertinet quam scire an minor Hecuba fuerit quam Helena. Even those however, who were inclined to treat this one such question as a proper subject of inquiry, were liable to be prejudiced by the implicit reception of the tradition relating to the contest between Hesiod and Homer; in which the former carried off the prize: a tradition confirmed, as it was supposed, by the existence of the tripod itself, dedicated by Hesiod at Helicon, and attesting both the fact of the contest,

to ripen; both which were ordinary symptoms of midsummer, and the latter in particular of the setting in of the opora.

> Ἡνίκ' ἂν δ' ἀχέτας
> ᾄδῃ τὸν ἡδὺν νόμον
> διασκοπῶν ἥδομαι
> τὰς Λημνίους ἀμπέλους
> εἰ πεπαίνουσιν ἤ-
> δη· τὸ γὰρ φῖτυ πρῷ-
> ον φύει [38].

The site of the ὀπώρα indeed in the natural year is one of the most generally recognised of all. Aristotle implies it, where he speaks of Orion, as both rising and setting, ἐν μεταβολῇ ὥρας [39]—for its rising, (a few days only before that of Sirius,) ushered in the ὀπώρα or ὥρα; its setting, a few days after that of Pleiades, ushered in the winter. Theophrastus: Ὁ δ' Ὠρίων ἀνατέλλει μὲν ἐν ἀρχῇ ὀπώρας, δύνει δὲ ἐν ἀρχῇ χειμῶνος [40]. We might shew in like manner from Xenophon [41], that his ὀπώρα was reckoned eight months before his spring; i. e. from about the end of July. *Sed de his satis.*

c Opp. iii. 116. Epp. lxxxviii. 5. cf. § 32, 33.

38 v. 1159–1163. cf. ad Aves, 39. And Schol. ad Aves, 1095.

39 Meteorologica, ii. 5. pag. 52. 22.

40 V. De Ventis, § 55. pag. 779.

41 Hellenica, iii. ii. 6: 10, 11. B.C. 398.

and that of his success in it, down to the latest times. The opinion of Varro at least seems to have been so determined; as we learn from A. Gellius[f]: M . . . Varro . . . uter natus prior sit parum constare dicit; sed non esse dubium quin aliquo tempore eodem vixerint: idque ex epigrammate ostendi quod in tripode scriptum est, qui in monte Helicone ab Hesiodo positus traditur. And though he has not given us the inscription itself, that too is found upon record; as for example in Dio Chrysostom[g], a contemporary of Trajan's: Ἢ οὐκ ἀκήκοας τὸ ἐπίγραμμα τὸ ἐν Ἑλικῶνι τὸ ἐπὶ τοῦ τρίποδος;

Ἡσίοδος Μούσαις Ἑλικωνίσι τόνδ' ἀνέθηκεν,
ὕμνῳ νικήσας ἐν Χαλκίδι θεῖον Ὅμηρον[h].

The existence of a tripod at Helicon, dedicated by Hesiod to the Muses, as the trophy of some contest in which he had won the prize from his contemporaries, there is no reason to doubt; for such a tripod unquestionably existed there down to the latest times. He tells us himself[i] he dedicated one in memorial of his first trial and first success in the contest of song, and no doubt with an inscription upon it; as nothing of that kind was ever dedicated anciently without an inscription. And this inscription may have been correctly represented by the first of the two lines quoted *supra*; but as to the second, which is the only important one upon this question whether Hesiod was as old as Homer, we must have other evidence than simply the inscription itself as handed down to our own times, to satisfy us that this in particular always made part of it. The tripod was still to be seen even in Pausanias' time; for among others which he saw at Helicon he describes this attributed to Hesiod[k]: Ὃν ἐν Χαλκίδι λαβεῖν τῇ ἐπ' Εὐρίπῳ λέγουσιν . . . νικήσαντα ᾠδῇ: and very possibly the inscription, as given above, was read upon it in his time also. But whether or not, he has said nothing about it; and whether he had seen it or not, we are authorized from other parts of his work to collect that he could not have believed it genuine—so much of it at least as attested the fact of a victory of Hesiod's over Homer. and consequently that he was as old as Homer.

There can be little doubt that for the invention of a story

[f] Noctes Atticæ, iii. 11. cf. xvii. 21.
[g] Orat. ii. tom. i. p. 76. 26.
[h] Cf. Libanius, iii. 22. 10. Ἐπὶ Σωκράτους ἀπολογία.
[i] Ad Opera et Dies, 656.
[k] ix. xxxi. 3.

like this there was a foundation already laid in a genuine incident of the personal history of Hesiod, his visit to Chalcis, at the funeral games of Amphidamas, and his victory there, of which he has given an account in the Works and Days: for the scene of the contest itself between him and Homer, as circumstantially related in the Opuscula De Homero [l], is laid in the same quarter and on the same occasion, as that of the Games celebrated in honour of Amphidamas—

Οὐ γὰρ πώποτε νηΐ γ' ἐπέπλων εὐρέα πόντον,
εἰ μὴ ἐς Εὔβοιαν ἐξ Αὐλίδος, ᾗ ποτ' Ἀχαιοὶ
μείναντες χειμῶνα πολὺν σὺν λαὸν ἄγειραν
Ἑλλάδος ἐξ ἱερῆς, Τροίην ἐς καλλιγύναικα.
ἐνθάδ' ἐγὼν ἐπ' ἄεθλα δαΐφρονος Ἀμφιδάμαντος
Χαλκίδα τ' εἰσεπέρησα· τὰ δὲ προπεφραδμένα πολλὰ
ἆθλ' ἔθεσαν παῖδες μεγαλήτορες· ἔνθα μέ φημι
ὕμνῳ νικήσαντα φέρειν τρίποδ' ὠτώεντα.
τὸν μὲν ἐγὼ Μούσῃσ' Ἑλικωνιάδεσσ' ἀνέθηκα,
ἔνθα με τὸ πρῶτον λιγυρῆς ἐπέβησαν ἀοιδῆς [m].

And here, as Proclus informs us, the eighth line was sometimes found written even in the Opera et Dies—

Ὕμνῳ νικήσαντ' ἐν Χαλκίδι θεῖον Ὅμηρον *—

which if genuine would have made him contemporary with

* The Scholiast on Pindar (Nemea ii, 1. cf. Hesiod, Fragm. xxxiv.) has quoted three lines (professedly Hesiod's), which speak of Homer and himself as having met on some occasion at Delos: though they say nothing of any contest between them at that time:

Ἐν Δήλῳ τότε πρῶτον ἐγὼ καὶ Ὅμηρος ἀοιδοὶ
μέλπομεν, ἐν νεαροῖς ὕμνοις ῥάψαντες ἀοιδήν,
Φοῖβον Ἀπόλλωνα χρυσάορον ὃν τέκε Λητώ.

Cf. Eustathius, ad Il. A. 6. 14, where also these lines are quoted. This forgery in the name of Hesiod betrays itself by the use of the phrase *ῥάψαντες ἀοιδήν*; which in the time of Hesiod, much more of Homer, was as yet unknown, and came up first with the rise of the order of poets and actors called *ῥαψῳδοί*: i. e. as we hope to see by and by, circa B. C. 504. What too could the author of this fragment have known of a visit of Homer to Delos, except from the Hymn to Delos, extant under his name? The antiquity of that Hymn is not greater than that of the Rhapsodists; one of whom (probably the first of the number whose name occurs in history) was its author. By referring also to this meeting at Delos, as the first of its kind, this fragment recognises by implication a second meeting some time or other, either there or somewhere else: most probably the famous meeting at Chalcis, when Homer was beaten by Hesiod.

[l] Cantabrigiæ, 1710. pag. xx–xxix. [m] v. 648-657.

Homer, and Homer himself one of his competitors on this very occasion.

Plutarch, as Proclus observes [n], would have rejected the the whole of this passage: but certainly on no sufficient grounds, if the reason assigned by Proclus was the true one; that he did not think it contained any thing *bonæ frugis*: it was a part of the Opera et Dies, which might very well be spared, for any moral or practical use which could be made of it. Were such a criterion of genuine or spurious to be applied to the remains of antiquity on a large scale, how little would be left for the authors whose names they bear! Plutarch's opinion of other parts of the Works and Days appears to have been determined by reasons equally uncritical [o].

This fiction then of the contest of Homer and Hesiod, and the supposed testimony to it in Hesiod's tripod, being set aside; we might proceed to the consideration of the different statements of antiquity concerning the age of Hesiod, uninfluenced by any prejudice beforehand. But it is not necessary for our purpose to do this in detail. Most of these statements are mixed up with similar testimonies to the age of Homer; which, if considered at all, must be reserved for a future opportunity. And as the testimonies of both kinds have been collected as fully as can possibly be necessary to judge of them, both collectively and individually, in the Fasti Hellenici of Mr. Clinton [p], we shall be satisfied ourselves with some general observations upon them.

From the order in which Hesiod and Homer were alluded to in the Ranæ of Aristophanes [q], the Scholiast inferred that in his opinion the former was the older of the two:

> Ὀρφεὺς μὲν γὰρ τελετάς θ' ἡμῖν κατέδειξε φόνων τ' ἀπέχεσθαι,
> Μουσαῖος δ' ἐξακέσεις τε νόσων καὶ χρησμοὺς, Ἡσίοδος δὲ
> γῆς ἐργασίας, καρπῶν ὥρας, ἀρότους· ὁ δὲ θεῖος Ὅμηρος κ', τ. λ.

Ὡς πρώτου ὄντος Ἡσιόδου μέμνηται. And that might be the opinion of Aristophanes; as it was of many others before and after him. Yet among those too who made Hesiod younger

[n] Ad vers. 648.

[o] Cf. ad v. 268—where, as Proclus tells us, he would have rejected seven verses: Ὡς ἀναξίους τῆς Ἡσιόδου περὶ δικαίων καὶ ἀδίκων κρίσεως: and ad 351. rejected by him also on similar grounds. Cf. also ad v. 354; retained by Plutarch, but rejected by others; and ad 359.

[p] Vol. i. Appendix, cap. vii. p. 359. sqq.

[q] v. 1032.

than Homer we may mention Xenophanes, Philochorus, Heraclides Ponticus, Eratosthenes[s], Apollodorus, Diodorus Siculus[t], Velleius Paterculus, Strabo[v], Porphyry, Tzetzes[x]: besides others, who were of the same opinion, but are anonymous[y]. Cicero, in his Cato Major[z], supposed him multis seculis younger than Homer; but in his Tusculan Disputations[a] he made both older than the Foundation of Rome.

It must be admitted indeed that the date which most even of these authorities assign him (100 or 200 years only later than Homer), is too high for the truth. It is however to be observed that testimonies to the age of Homer occur which bring it down 500 years later than Troja Capta: and consequently are much too low for that, but would approximate to the age of Hesiod. If the date of the capture was B. C. 1181—as we believe it was—and that of the Works and Days was B. C. 569, the latter was just 612 years later than the former. If the true age of Homer, again, (the date of the composition of the Iliad at least,) was B. C. 910, (as we hope some time or other to shew that it was,) the Works and Days were just 341 years younger than the Iliad; in round numbers 400 years. Proclus Diadochus, in his preliminary account of Hesiod, made this the interval between Homer and Hesiod[b]: *Συνηκμακέναι δ' αὐτὸν οἱ μὲν Ὁμήρῳ φασὶν, οἱ δὲ καὶ Ὁμήρου προγενέστερον εἶναι . . . . διϊσχυριζόμενοι, ἐν ἀρχαῖς εἶναί φασι τῆς Ἀρξίππου ἀρχῆς, Ὅμηρον δὲ ἐν τῷ τέλει. ὁ δ' Ἄρξιππος οὗτος υἱὸς ἦν Ἀκάστου, ἄρξας Ἀθηναίων ἔτη λε΄*[c]. *οἱ δὲ συγχρόνους αὐτοὺς εἶναι λέγοντες, ἐπὶ τῇ τελευτῇ τοῦ Ἀμφιδάμαντος τοῦ βασιλέως Εὐβοίας φασὶν αὐτοὺς ἀγωνίσασθαι, καὶ νενικηκότα Ἡσίοδον, ἀγωνοθετοῦντος καὶ κρίνοντος Πανίδου τοῦ βασιλέως τοῦ ἀδελφοῦ Ἀμφιδάμαντος, καὶ τῶν υἱῶν Ἀμφιδάμαντος Γανύκτορός τε καὶ τῶν λοιπῶν . . . Ὅμηρος γὰρ ὁ χρυσοῦς*[d], *ὡς ἐγῷμαι, μᾶλλον δὲ ἀκριβεστάτως ἐπίσταμαι, πολύ τι παλαιότερος Ἡσιόδου ὑπῆρχε κ', τ. λ. . . . ἐκ τούτου οὖν λογίζομαι τοῦτον τὸν Ἡσίοδον εἶναι τετρακοσίων ἐτῶν μεταγενέστερον. Ἀριστοτέλης*

[s] Cf. Strabo, i. 2. 35, 36.

[t] Cf. The Anecdota Græca, Par. ii. 227. 21–30.

[v] vii. 3. 78 a.

[x] Chilias, xii. 163: 191. cf. xiii. 649. Histor. 496. Schol. in Hesiod. Opp. et Dies, passim.

[y] Cf. Euseb. Chron. Arm. Lat. ii. 43. ad ann. 915. 169. ad ann. 1208. Thes. Tempor. ann. 908: 1255. Cyrill. contra Julian. i. 12. B.

[z] Cap. 15, 54.

[a] i. 1, 3: cf. v. 3, 7. also Brutus, 10, 40.

[b] Pag. 5. cf. Phot. Cod. 239. p. 319.

[c] Cf. Tzetzes on Hesiod, p. 14. who calls him Archippus.

[d] Ibid. p. 15.

γὰρ ὁ φιλόσοφος, μᾶλλον δὲ οἶμαι ὁ τοὺς Πέπλους συντάξας, ἐν τῇ Ὀρχομενίων πολιτείᾳ Στησίχορον τὸν μελοποιὸν εἶναί φησιν υἱὸν Ἡσιόδου, ἐκ τῆς Κλυμένης αὐτῷ γεννηθέντα, τῆς Ἀμφιφάνους καὶ Γανύκτορος ἀδελφῆς, θυγατρὸς δὲ Φηγέως. ὁ δὲ Στησίχορος οὗτος συγχρόνος ἦν Πυθαγόρᾳ τῷ φιλοσόφῳ καὶ τῷ Ἀκραγαντίνῳ Φαλάριδι· οἱ δὲ Ὁμήρου τετρακοσίοις ὑστέριζον ἔτεσι, καθά φησι καὶ Ἡρόδοτος [e].

In ascribing the Orchomeniorum Politia to the author of the Pepli, as a different person from Aristotle, Proclus was mistaken; and as that was the work of Aristotle, and as such is referred to again by Proclus himself, in his account of Ascra and the parentage of Hesiod[f], we must presume that Aristotle's opinion on this point was exprest in that work. We must also suppose he was of opinion that Stesichorus really stood in the relation of son to Hesiod*: which if true

* Stesichorus is certainly by others of the ancients called the son of Euphemus, not of Hesiod; and represented as either a native or a citizen of Himera in Sicily: for instance, by Plato[1]. Yet on a question of this kind Plato would not be so good an authority as Aristotle; who also was aware of the relation of Stesichorus to Himera, as a citizen of that place, at least, if not a native; as appears from the fable which he ascribes to him, in his Rhetorica[2], and supposes to have been delivered at Himera, in the time of Phalaris. His connection with Himera also, either natural or acquired, is implied by the fact of his having been buried there, and had a tomb (a remarkable structure) erected over his remains there[3]; though this monument is spoken of also, as if it was at Catana, not at Himera[4]. We cannot help thinking an opinion of this kind, which appears to have been entertained by Aristotle, must have had some foundation in truth. Nor was Aristotle singular in considering Stesichorus the son of Hesiod. Proclus, ad Opera et Dies[5], observes, Ἰστέον δὲ ὅτι υἱὸς Ἡσιόδου Μνασέας ἐστί· Φιλόχορος δὲ Στησίχορόν φησι, τὸν ἀπὸ Κλυμένης· ἄλλοι δὲ Ἀρχιέπης. As we have already observed, those who were of this opinion could not have thought Hesiod more than a generation older than Stesichorus. As

e Cf. Tzetzes on Hesiod, p. 15: also ad Opp. et Dies, 236. p. 144, 145: 260. p. 156. In quoting Herodotus as of opinion that Hesiod was 400 years younger than Homer, Proclus was mistaken: cf. Herod. ii. 53. where both are made of an age, and both 400 years older than his own time.

f Ad Opp. 631.

1 i. 35. 16. Phædrus. cf. Steph. Byz. Μάταυρος.

2 ii. xx. 90. 23.

3 Cf. Scholia in Platon. ii. 320: Lysis, 115. 5: Eustathius ad Iliad ψ. 88. 1289. 59. ad Od A. 107. 1397. 39: Schol. in Pind. Ol. xii. Argument.

4 Cf. Antholog. ii. 27: Antipater Sidonius, lxxvii.: Phot. Lex. πάντα ὀκτώ. Suidas in πάντα ὀκτώ—who nevertheless in Στησίχορος represents him as the son of Hesiod, according to some, and born in Himera.

5 268.

would be decisive of the age of the latter in comparison of that of Homer.

Plutarch also must have been one of those who made Hesiod three or four hundred years later than Homer. He notices the story of his contest with Homer only to treat it as an old wife's tale[g]: and in his Convivium, the scene of which is laid at Corinth in the time of the seven wise men, in the reign of Periander, the death of Hesiod is supposed to have been still a recent event; and the discovery of his remains by the people of Orchomenus, whom the oracle had commanded to search for them, until they should be found, not yet to have taken place[h]. Pausanias tells us they were discovered at last at Naupactus, and from thence transferred to Orchomenus[i]. And as he has recorded the inscription put on his tomb there, and told us also that it was composed by Chersias, whom Plutarch himself recognises as a contemporary of the guests in his Convivium[k], there is every reason to conclude the date of the discovery could not have been much later than the time of these wise men.

This question of the comparative antiquity of Homer and Hesiod appears to have engaged the attention of Pausanias in a particular manner; and though he has declined to enter formally on it, it is easy to see that his inquiries must have led him to some conclusion very different from the common opinion about it; so different in fact that he was afraid to state it in plain terms. Speaking of the statues at Helicon, he observes[l]; *Κάθηται δὲ καὶ Ἡσίοδος κιθάραν ἐπὶ τοῖς γόνασιν ἔχων, οὐδέν τι οἰκεῖον Ἡσιόδῳ φόρημα· δῆλα γὰρ δὴ καὶ ἐξ αὐτῶν τῶν ἐπῶν ὅτι ἐπὶ ῥάβδῳ δάφνης ᾖδε*[m]. *περὶ δὲ Ἡσιόδου τε ἡλικίας*

to the time of Stesichorus, to suppose him the son of Hesiod, and born when Hesiod was about 30, that is, circa B.C. 590, and to have lived to near the end of that century, would agree with the chronology of his personal history, as far as any thing is known of it at present. He was certainly a contemporary of Phalaris, whose tyranny at Agrigentum and elsewhere in Sicily comes in the first part of this period. Lucian[6] supposes him to have lived to the age of 85.

g Sympos. v. ii. 1.
h xix.
i ix. xxxviii. 3, 4. ad fin.
k xiii. xiv.
l ix. xxx. 2.
m Cf. the Anthologia Græca, i. 151: Asclepiades, xxxiv.

6 *Μακρόβιοι*, cap. 26.

καὶ Ὁμήρου πολυπραγμονήσαντι ἐς τὸ ἀκριβέστατον οὔ μοι γράφειν ἡδὺ ἦν, ἐπισταμένῳ τὸ φιλαίτιον ἄλλων τε καὶ οὐχ ἥκιστα ὅσοι κατ' ἐμὲ ἐπὶ ποιήσει τῶν ἐπῶν καθεστήκεσαν. This proves sufficiently that he did not concur in the common opinion respecting their age; and yet did not in a slight degree dissent from it. Speaking after this too of the contests of music anciently at Delphi, he mentions a fact which, if true, in our opinion goes far to confirm all our conclusions, concerning the real age of Hesiod[n]: *Λέγεται δὲ καὶ Ἡσίοδον ἀπελασθῆναι τοῦ ἀγωνίσματος, ἅτε οὐ κιθαρίζειν ὁμοῦ τῇ ᾠδῇ δεδιδαγμένον.* The Pythian games are meant; which were a musical contest from the first, but open only to competitors with the *κιθάρα*. Now the first Pythiad properly so called bears date from B. C. 582, or from 586 at the earliest. This incident therefore, relating to the exclusion of Hesiod from that solemnity, could not have happened before B. C. 586. It may be said indeed that the Pythian contest existed long before B. C. 586: but there is no proof that there was any *ἀναγραφὴ*, any particular account, of success or failure in such contests, or of the admission or rejection of candidates at them, before B. C. 586.

Upon a question of fact then, about which our judgments are thus liable to be distracted by contrary testimonies, we have no alternative except to submit these different statements themselves to some common criterion of their credibility or their incredibility, *a priori*; such as Hesiod's own account of himself: and if one class of them is found to be consistent with the internal evidence of his own works, to retain that, and to refer to it as confirmatory of our conclusion; if another is at variance with it, to reject it as unworthy of credit. No external testimony, as we before observed, can supersede the testimony of an author concerning himself. There is no reason to suppose that any such testimony, at variance with the internal evidence of Hesiod's own works, represents any thing but individual opinions; the reasons of which have not been explained, and probably, if they had been, would not be found to justify the conclusions grounded upon them. Among these authorities however there is none who in point of natural sagacity and critical acumen, and the extent and variety of his information upon all such questions

[n] x. vii. 2.

as these, could be considered superior to Aristotle: and Aristotle's conclusions on this subject must have been very different from the common opinion, and much more in accordance with our own.

Section X.—*Objections to the above conclusion of the true age of Hesiod, from the Hesiodic writings.*

We shall now proceed to consider, whether any objections to the conclusion thus established may be discovered in Hesiod's own remains: i. e. more particularly in his Works and Days.

i. He speaks apparently of the worthies of the Heroic age—those who made a figure in the wars of Thebes and Troy—as if they belonged to the generation next before his own and that of his contemporaries [o]. And such is the inference which modern chronologers have usually drawn from these allusions. To draw it however from his language in this instance, is to mistake its meaning. Beginning with the earliest times (those of primæval innocence), he classes all mankind under *four* comprehensive divisions; the Golden age [p], the Silver age [q], the Brazen age [r], and the Heroic age [s]: next after which he speaks of himself and his own contemporaries [t]—

> *Μηκέτ' ἔπειτ' ὤφειλον ἐγὼ πέμπτοισι μετεῖναι*
> *ἀνδράσιν, ἀλλ' ἢ πρόσθε θανεῖν ἢ ἔπειτα γενέσθαι.*
> *νῦν γὰρ δὴ γένος ἐστὶ σιδήρεον* [v], *κ', τ. λ.*

And though to the Heroic race he certainly applies the description of *ἡμίθεοι προτέρῃ γενεῇ*, this no more implies that he supposed there was only one generation between them and the Iron age, than that there were only two generations between the Golden age and the Heroic. This allusion affirms nothing of the distance of time between the fourth race and the fifth; nothing but the distinction of races. *Προτέρη γενεὴ* has not here the sense of *the last generation*, the generation before his own, but simply that of *a former* generation, a generation older indeed than Hesiod and his contemporaries, but how much older he does not say.

ii. It may be collected from various passages of the Works

[o] v. 155–171. [p] 108–119. [q] 126–141. [r] 142–154. [s] 155–171. [t] 172. [v] cf. 631–638: 297: 648: 660.

and Days[w], as well as from the Theogonia[x], that the prevailing form of civil government, in the time of the author of both these productions, must have been still the monarchical; and had not yet been superseded by that of commonwealths, democracies, or republics. The title which they apply to persons in authority, whether one or more, is that of Βασιλεῖς; especially to those who had the administration of justice in their hands: and that too whether the power which they were possessing *de facto* had been rightfully or wrongfully obtained, or was rightfully or wrongfully exercised. From this mode of speaking, (which is characteristic of the style of these works throughout,) it seems only a natural inference that the form of government, most generally prevailing in their time, must have been the oligarchical—an intermediate state of things between the hereditary but legitimate and constitutional monarchies of the earlier period, and the free institutions, or democracies, of later times.

The name of *τύραννοι* does not occur in Hesiod *; though his description of the *kings* of his own time, as greedy and rapacious, as open to bribes, and to interested motives, in the administration of justice, would be much more applicable to the idea of the tyrants of later times, than to that of the kings of former.

* Eustathius observes[1], *Ἠγνοεῖτο γὰρ ἐπὶ Ὁμήρου ἡ τύραννος λέξις*: and it is certain that even when describing the character, (as in this instance,)

Εἰς Ἔχετον βασιλῆα κ', τ. λ.[2]

Homer does not call it by this name. *Τύραννος ... τύραννον δὲ οἱ ἀρχαῖοι καὶ ἐπὶ βασιλέως ἔτασσον, ἔσθ' ὅτε δὲ καὶ τὸν τύραννον βασιλέα ἔλεγον*[3]—*Χρῶνται δὲ ἀδιαφόρως ἔνιοι τοῖς ὀνόμασι* (*βασιλεὺς* and *τύραννος*)[4]. Pindar applied the name of *βασιλεὺς* to Hiero; Eupolis to the Pisistratidæ[5].

Ἴδιον δέ τι πεπόνθασιν οἱ μεθ' Ὅμηρον ποιηταὶ, τοὺς πρὸ τῶν Τρωϊκῶν βασιλεῖς τυράννους προσαγορεύοντες, ὀψέ ποτε τοῦδε τοῦ ὀνόματος εἰς τοὺς Ἕλληνας διαδοθέντος κατὰ τοὺς Ἀρχιλόχου χρόνους, καθάπερ Ἱππίας ὁ σοφιστής φησιν... ὅτι δὲ νεώτερον τὸ τοῦ τυράννου ὄνομα δῆλον. οὔτε γὰρ Ὅμηρος οὔτε Ἡσίοδος οὔτε ἄλλος οὐδεὶς τῶν παλαιῶν τύραννον ἐν τοῖς ποιήμασιν ὀνομάζει. ὁ δὲ Ἀριστοτέλης ἐν Κυμαίων πολιτείᾳ τοὺς τυράννους φησὶ τὸ πρότερον αἰσυμνήτας προσαγορεύεσθαι, εὐφημότερον γὰρ ἐκεῖνο τοὔνομα[6]. Aristotle

[w] v. 37 &c.: 200: 246–249: 256–262. [x] v. 80–93: 434.

[1] Ad Od. Σ. 84. 1839. 10.
[2] Cf. ad Σ. 115. Φ. 308.
[3] Etym. M.
[4] Schol. in Aristoph. ad Acharn. 61.
[5] Cf. Schol. in Æsch. ad Prom. 224.
[6] Arg. ii. ad Œdip. Tyr.: cf. Schol. in Eurip. ad Med. 19. *αἰσυμνᾷ*: Etym. M. *Αἰσυμνήτης*: Suidas, *Τύραννος*.

With respect to the question how far this picture of the political state of his own time is consistent with our date of his age; we know too little of the history of Greece from the beginning to the middle of the sixth century before the Christian æra, to undertake to pronounce confidently

indeed does speak of the *αἰσυμνῆται* of the ancient Greeks, as a kind of constitutional *τύραννοι*, an *αἱρετὴ τυραννίς*[7]: just as Dionysius of Halicarnassus, both because of the absoluteness of their authority, and yet the constitutional character of its origin, compares them to the Dictators among the Romans[8]. In fact, in some of the Grecian communities the ordinary civil magistrate had the title of *αἰσυμνήτης*, as at Teos[9], and Chalcedon[10].

Hesiod not having been much younger than Archilochus, if this word was first introduced into the Greek language by Archilochus, it was *a priori* to be expected that it would not occur in the remains of Hesiod. In fact, it does not occur at present even in those of Archilochus, though *τυραννὶς* does[11],

Μεγάλης δ' οὐκ ἐρῶ τυραννίδος.

Τυραννὶς occurs also in one of the fragments of Solon, (later however than the date of his legislation, B. C. 593)—

Εἰ δὲ γῆς ἐφεισάμην
πατρίδος, τυραννίδος δὲ καὶ βίης ἀμειλίχου
οὐ καθηψάμην[12].

In those of Alkæus the name of *τύραννος* is applied to Pittacus, his contemporary; though he was no doubt strictly the *αἰσυμνήτης* of Mitylene, for the time being[13]. *Τύραννος* occurs in Theognis[14]; but he was probably later than Hesiod. In the *Δωδεκαετηρίδες* too, ascribed to Orpheus, both *κοίρανος* and *τύραννος* are opposed to *βασιλεύς*[15]: which, if the word was really first used in Greek by Archilochus, must be decisive that these *Δωδεκαετηρίδες* could not have been the composition of Orpheus, some centuries older than Archilochus.

With respect to the etymon of this word; the Lexicons derive it from *κοίρανος*, but by a very tortuous process. Some of the ancient grammarians derived it from *Τυρρηνὸς*, as synonymous with *λῃστὴς*, any violent and lawless person[16]; the Tyrrhenians of ancient Italy having been notoriously addicted to piracy: and Philochorus seems to have been one of them[17]. It is most probable that the word was originally a gloss, borrowed by Archilochus from some of the languages of Asia Minor; and that its proper meaning in its own language was simply that of *δεσπότης* in Greek.

7 Politica, iii. 14. p. 85. 5: 15. 89. 4: iv. 10. 110. 3.
8 Ant. Rom. v. 73, 74.
9 Corp. Inscript. 3044.
10 Ibid. 3794.
11 x. 3.
12 Fragm. xxvii.
13 Schol. in Arist. Politica, iii. 14.
14 822: 1183: 1204.
15 Apud Tzetz. ad Lycoph. 523.
16 Etym. M. *τύραννος* and the Schol. in Soph. loc. cit.
17 Schol. in Lucian. i. 620. Cataplus, i.

about it. We know however that the monarchical or the oligarchical form of government was still existing in various quarters, during this period, and after it: in Sparta, in Athens, in Argos[y], in Corinth, in Sicyon, in Megara, in Eubœa, in Lesbus, in Ionia, in Græcia Major, in Sicily. We know too, from the testimony of Thucydides[z], that the rise of free institutions in Greece generally, is not to be dated before the final expulsion of the Pisistratidæ, B. C. 510[a].

iii. It is possible that an objection may be taken from the allusion to the visit to Chalcis[b], and the occasion to which it was due; to which we alluded supra[c]. It is commonly supposed that this Amphidamas was king of Chalcis, and leader of the people of Chalcis in a war with the people of Eretria; in the course of which, in an action by sea, as Plutarch gives us to understand[d], he lost his life: and that these games, attended by Hesiod, were celebrated in consequence of his death[e]. We may admit the truth of this traditionary explanation of the visit, and yet it will not endanger our conclusion respecting the age of Hesiod. The fact of a war between the people of Chalcis and the people of Eretria, (produced too as this is said to have been*,) though an

* That is, Ὑπὲρ τοῦ Ληλάντου (πεδίου): Proclus, ad v. 648. Hesychius, Ληλάντειον· πεδίον τῆς Εὐβοίας, ὠνομασμένον ἀπὸ Ληλάντου βασιλέως. Cf. Photii Lex. Ληλάντου πεδίον. Strabo, x. i. 323. b. Ὑπέρκειται δὲ τῆς τῶν Χαλκιδέων πόλεως τὸ Λήλαντον καλούμενον πεδίον—

Στῆς δ' ἐπὶ Ληλάντου πεδίῳ, τό τοι οὐχ ἅδε θυμῷ
τεύξασθαι νηόν τε καὶ ἄλσεα δενδρήεντα.

Hymn. ad Apollin. 220.

It seems to have borne proverbially the surname of *ἀγαθόν*. Theognis at least so designates it:

Οἴμοι ἀναλκείης· ἀπὸ μὲν Κήρινθος ὄλωλε·
Ληλάντου δ' ἀγαθὸν κείρεται οἰνόπεδον·
οἱ δ' ἀγαθοὶ φεύγουσι πόλιν δὲ κακοὶ διέπουσιν.
ὡς Κυψελλίζον Ζεὺς ὀλέσειε γένος.

v. 887.

[y] Cf. Herod. vii. 149.
[z] i. 18.
[a] Cf. Dionys. Hal. Ant. Rom. v. 74.
[b] Opera et Dies, 649–660.
[c] Page 301.
[d] Sept. Sap. Conviv. x: Fr. xxxvi.
[e] Cf. Proclus, ad v. 648.

ancient event of its kind, is too well attested to be called in question. Strabo refers to it in his account of Eubœa[f]. Aristotle mentioned it also; and from his allusion to it we may infer, it must have belonged critically to that same æra in Grecian history, when the form of civil government in general was such as appears to have been still existing in Hesiod's time, viz. the oligarchical[g]: *Διόπερ ἐπὶ τῶν ἀρχαίων χρόνων ὅσαις πόλεσιν ἐν τοῖς ἵπποις ἡ δύναμις ἦν, ὀλιγαρχίαι παρὰ τούτοις ἦσαν. ἐχρῶντο δὲ πρὸς τοὺς πολεμίους ἵπποις πρὸς τοὺς ἀστυγείτονας, οἷον Ἐρετριεῖς καὶ Χαλκιδεῖς κ᾽, τ. λ.* Thucydides too observes[h] that most of the rest of the Greeks took part, in the course of this war, with one or other of the principals in it; and Herodotus assigns it as the reason why the Eretrians assisted the people of Miletus, in their revolt from the Persians, that the Milesians had assisted them in this contest with the people of Chalcis, as the Samians had done the people of Chalcis[i]. And from this fact, as much as any thing, we may very probably infer that the war itself, and the obligation thus conferred upon the people of Eretria, were still comparatively of recent date; for the recollection of such services, even between neighbouring communities, soon passes away, much more between distant ones. Every one at least must allow it to be infinitely more probable the Eretrians should not yet have forgotten this obligation an hundred years afterwards, than three or four hundred.

That this incident in the life of Hesiod had happened before he wrote his Works and Days, may be taken for granted; but how long, cannot be inferred from his allusion to it. And yet it may be collected even from that, that it was more probably not long before, than the contrary: for it appears that this was not the first occasion on which he

So also Callimachus, in his hymn to Delos, speaking of the visit of the Hyperboreans—

Κεῖθεν δὲ διαπλώουσιν Ἀβάντων
εἰς ἀγαθὸν πεδίον Ληλάντιον· οὐδ᾽ ἔτι μακρὸς
ὁ πλόος Εὐβοίηθεν· ἐπεὶ σέο γείτονες ὅρμοι.
v. 288.

Ἐν Εὐβοίᾳ πεδίον Ληλάντιον, ἀπὸ Λήλαντος βασιλέως. Schol. in loc.

[f] Lib. x. i. 325. b.–326. b: cf. Eustathius, ad Il. B. 537. 279. 20.

[g] Politica, iv. 3. pag. 96. 24.

[h] i. 15.

[i] v. 99.

had attempted the song—nor this tripod the first prize which he had won in such contests—

> Τὸν μὲν ἐγὼ Μούσησ' Ἑλικωνιάδεσσ' ἀνέθηκα,
> ἔνθα με τὸ πρῶτον λιγυρῆς ἐπέβησαν ἀοιδῆς—

the meaning of which is, that he dedicated the tripod, so won at Chalcis, in Helicon, because that was the spot where he had first essayed the song, and won the victory. So that his poetical career had begun at Helicon, not at Chalcis; in other words, (as was naturally to be expected,) at Ascra, his native place, which was situated in the vicinity of mount Helicon.

Section XI.—*On the personal history of Hesiod.*

Proclus informs us that Hesiod was the son of Dius and Pycamede (Πυκαμήδη) [k]. The name of his mother, though handed down only traditionally, he considered to be a well ascertained point; while as to that of his father, it was confirmed apparently by his own apostrophe to Perses his brother [l]:

> Ἐργάζευ Πέρση, Δῖον γένος—

where too there was a various reading of Δίου γένος. He tells us moreover himself that his father some time or other migrated from Κύμη in Æolia, and settled at Ascra, near mount Helicon in Bœotia [m]—

> Νάσσατο δ' ἄγχ' Ἑλικῶνος ὀϊζυρῇ ἐνὶ κώμῃ
> Ἄσκρῃ, χεῖμα κακῇ θέρει ἀργαλέῃ, οὐδέ ποτ' ἐσθλῇ *.

* Strabo, ix. 2. 262 a: Ἐν δὲ τῇ τῶν Θεσπιέων ἐστὶ καὶ ἡ Ἄσκρη κατὰ τὸ πρὸς Ἑλικῶνα μέρος, ἡ τοῦ Ἡσιόδου πατρίς· ἐν δεξιᾷ γάρ ἐστι τοῦ Ἑλικῶνος ἐφ' ὑψηλοῦ καὶ τραχέος τόπου κειμένη: 40 stades from Thespiæ: cf. Eustath. ad Il. B. 498. 266. 15. Proclus, ad v. 631. (from Plutarch): Κεῖται μὲν οὖν ὑπὲρ τὴν ὁδὸν ἣν βαδίζουσιν οἱ ἐπὶ τὸ Μουσεῖον ἀπιόντες αὕτη ἡ Ἄσκρη: cf. Pausanias, ix. xxix. 1: Strabo, ix. 2. 263. Eudoxus, according to Strabo, (ix. 2. 268: cf. Eustathius, ad Il. B. 507. 270. 38,) gave it a worse character even than Hesiod; the reason being, according to Proclus, that as lying on the south side of mount Helicon, it was exposed to the winds in the winter, and to the sun in the summer. In Plutarch's time it was desolated, and had long been so: Proclus, loc. cit.: Ἀοίκητον δὲ αὐτὸ Πλούταρχος ἱστορεῖ καὶ τότε εἶναι, Θεσπιέων ἀνελόντων

k Γένος, p. 5: cf. ad Opp. 630–637. 640–658: Opuscula de Homero, Ἀγὼν Ὁμήρου καὶ Ἡσιόδου, pag. xxxii.: Suidas, Ἡσίοδος.
l v. 297. m 631–638.

That Hesiod himself could not have been born at Cume before the migration of his father, but must have been so in Ascra, after he settled there, his own declaration [n], that he had never had any experience of the sea before his voyage to Chalcis, ought to be decisive. Accordingly, he is uniformly represented as a native of Ascra [o].

Sixteen books of poems on various subjects, ascribed to him, must have been more or less known to the ancients; so that a very small part of his reputed works has come down to modern times. Among these the Theogonia and the Aspis probably made part of one and the same argument—the origin of gods and men; the former devoted to the genealogy of the gods and goddesses, the latter to that of the heroes and heroines. It is evident that the Aspis in its present state is nothing more than a fragment; and as it begins with the phrase, *ἢ οἵη*, it must have belonged to that class of the productions of Hesiod, to which, as opening with the same phrase, the ancients gave the name of his Ἠοῖαι *.

τοὺς οἰκοῦντας, Ὀρχομενίων δὲ τοὺς σωθέντας δεξαμένων. ὅθεν καὶ τὸν θεὸν Ὀρχομενίοις προστάξαι τὰ Ἡσιόδου λείψανα λαβεῖν, καὶ θάψαι παρ' αὐτοῖς, ὡς καὶ Ἀριστοτέλης φησὶ, γράφων τὴν Ὀρχομενίων πολιτείαν. If so, Ascra must have been laid waste, and its inhabitants dispersed, even in the lifetime of Hesiod, and after the composition of his Works and Days: which would account for the fact that just before his death he was no longer living there, but in Acarnania or Locris. In this case too, the calendar also of Ascra must have speedily ceased to exist.

* Proclus Diadochus, p. 7: *Συνεγράψατο δὲ ὁ τοιοῦτος Ἡσίοδος βίβλους ἑκκαίδεκα· Ὅμηρος δὲ ὁ παλαιὸς ιγ'.* Cf. ad p. 8, where the titles of some of them are given: cf. also Pausanias, ix. xxxi. 4: xxxvi. 4: xl. 3: (vi. xxi. 7.)

Pausanias was one of those who doubted of the genuineness of the Theogonia. He never mentions it without some observation which intimates his suspicions about it: cf. viii. xviii. 1: ix. xxvii. 2: xxxv. 1. The Works and Days were always allowed to have been his: the Proœm, as it stands, alone having been sometimes suspected. Concerning this Pausanias observes, ix. xxxi. 4, *Βοιωτῶν δὲ οἱ περὶ τὴν Ἑλικῶνα οἰκοῦντες παρει-*

n 648–660: cf. 633.

o Cf. the epigram on his tomb at Orchomenus, whether by Chersias of Orchomenus, (Pausanias, ix. xxxviii 3–6,) or Mnasalkes of Sikyon, (Antholog. i. 126. Μνασάλκου, xv.: cf. iv. 224. Ἀδέσποτα. Dii:) Moschus, Eidyll. iii. 88: Virgil, Eclog. vi. 70: Georg. ii. 176: Culex, 95: Nonnus, xiii. 75.

With regard to the order of these three compositions; the internal evidence of the Works and Days leads to the inference that it must have been the last, and probably written when the author was advanced in years. There are many allusions in it which imply that he could not have been a young man when he wrote it. The age of marriage, which he himself prescribed, was 30 or 40 [o]: and from the allusion to his son [p]—

> Νῦν δὴ ἐγὼ μήτ' αὐτὸς ἐν ἀνθρώποισι δίκαιος
> εἴην, μήτ' ἐμὸς υἱὸς κ', τ. λ.—

we may probably collect that, before he was writing, he was married himself, and had a son. It is certain at least [q] that Perses, his brother, must have been married, and have had both a wife and children, before the work was written; and there is no reason to suppose he would be married before Hesiod, who appears to have been the elder brother. The age of manhood with Hesiod, (the age at least of confirmed steadiness and gravity,) is 40 [r]: so that we may presume neither he nor his brother was less than 40. And yet, from another allusion to his own contemporaries, as not yet old enough to have grey hairs on that part of the head where the hair first turns grey, (i. e. the temples [s],) we may probably also infer, that most of his *ὁμήλικες*, at this same time, were not more than 50 years of age.

The age of Hesiod then, when he composed his *Ἔργα,* was probably between 50 and 60. Let us suppose it not more than 50. On that supposition, the date of this poem having been B. C. 569, the date of his birth must have been about B. C. 619. The Works and Days, on this principle, must have been one of the latest of his productions: a conclusion which their style and manner throughout is well calculated to confirm.

λημμένα δόξῃ λέγουσιν ὡς ἄλλο Ἡσίοδος ποιῆσαι οὐδὲν ἢ τὰ Ἔργα. καὶ τούτων δὲ τὸ ἐς τὰς Μούσας ὑφαιροῦσι προοίμιον, ἀρχὴν τῆς ποιήσεως εἶναι τὸ ἐς τὰς Ἔριδας λέγοντες.

[o] v. 693. [p] 268. [q] 392–401. [r] 439.

[s] v. 178. *Ζεὺς δ' ὀλέσει καὶ τοῦτο γένος μερόπων ἀνθρώπων,*
εὖτ' ἂν γεινόμενοι πολιοκρόταφοι τελέσωσιν.

Cf. Theocritus, Idyll. xiv. 68:

> *Ἀπὸ κροτάφων πελόμεσθα*
> *πάντες γηραλέοι.*

But with regard to the Theogonia and the Aspis, there is so much more of poetical animation in these two poems, so much more of the exuberance and freshness of a youthful imagination, so much more loftiness of thought and diction, that we can scarcely be mistaken in assuming that both must have been the productions of Hesiod's youth. It is observable that though there are frequent allusions to the year in both, no traces of a lunar year are discoverable in either; and if Hesiod was born circa B. C. 620, he must have been 28 B. C. 592, when the lunar correction of Solon first took place; before which time of life it may well be supposed he had already made trial of his poetical powers. Sophocles entered the lists against Æschylus exactly at the same age[p].

The strain of these allusions is similar to that of such as occur in Homer also; in whose time the year was the same as in Hesiod's, before the correction of Solon.

> Χάσμα μέγ᾽· οὐδέ κε πάντα τελεσφόρον εἰς ἐνιαυτὸν
> οὖδας ἵκοιτ᾽, εἰ πρῶτα πυλέων ἔντοσθε γένοιτο [q].
>
> Κεῖται νήϋτμος τετελεσμένον εἰς ἐνιαυτόν [r].

He has imitated Homer too in his description of the locality of the prison of the Titans; as so many degrees removed both from heaven and earth[s].

> Ἐννέα γὰρ νύκτας τε καὶ ἤματα χάλκεος ἄκμων
> οὐρανόθεν κατιὼν δεκάτῃ ἐς γαῖαν ἵκοιτο·
> ἐννέα δ᾽ αὖ νύκτας τε καὶ ἤματα χάλκεος ἄκμων
> ἐκ γαίης κατιὼν δεκάτῃ ἐς Τάρταρον ἵκοι·

from which we may infer also that like Homer he reckoned his *day* from his *night;* i.e. his noctidiurnal cycle, from evening or sunset, not from morning or sunrise: as the author of the Works and Days too must have done[t].

It is observable also that there is no clear allusion in Hesiod (not even in these poems, in which it was more probably to have been expected than in the Works and Days,) to that primitive rule of domestic life, of which we had occasion to make mention in illustration of the name of the month Gamelion, the celebration of marriages at one time and in one month, and this month, among the Greeks, the first of the year; though such allusions are discoverable in

[p] Chron. Parium, Epocha 55.
[q] Theogon. 740.
[r] 795
[s] 722.
[t] Supra, page 274.

Homer. And this must be reckoned among the other arguments, from the internal evidence of his works, that he was in reality much younger than Homer: for there can be no doubt that from the time of Homer downwards this custom gradually fell into disuse, though it might not have ceased to exist (or at least to be remembered) by the time of Solon. Yet there are allusions in these two poems, which, with the knowledge of this ancient usage, may appear to be significant, and to point to the *beginning* of the year as the proper season of marriage, and to the *end*, or *towards* the *end*, as that of births. Thus, of the daughters of Phorkys and Medusa, one of them espoused by Posidon[v]—

> Ἡ μὲν ἔην θνητή, αἳ δ' ἀθάνατοι καὶ ἀγήρω
> αἱ δύο· τῇ δὲ μιῇ παρελέξατο Κυανοχαίτης
> ἐν μαλακῷ λειμῶνι καὶ ἄνθεσιν εἰαρινοῖσιν.

And of the birth of the Furies and Giants from the wounds of Uranus[x]—

> Ὅσσαι γὰρ ῥαθάμιγγες ἀπέσσυθεν αἱματόεσσαι,
> πάσας δέξατο Γαῖα· περιπλομένων δ' ἐνιαυτῶν,
> γείνατ' Ἐριννῦς τε κρατερὰς μεγάλους τε Γίγαντας.

And of Cronos, restoring to life the offspring which he had swallowed[y]—

> Ἐπιπλομένου δ' ἐνιαυτοῦ
> Γαίης ἐννεσίῃσι πολυφραδέεσσιδολωθεὶς
> ὃν γόνον ἂψ ἀνέηκε μέγας Κρόνος ἀγκυλομήτης.

And lastly, of the birth of Hercules and Iphiclus[z]—

> Τάχα δ' ἄμμες ἐπιπλομένων ἐνιαυτῶν
> γεινόμεθ', οὔτε φυὴν ἐναλίγκιοι οὔτε νόημα.

As for any further particulars of his personal history, we may collect from the Works and Days[a] that his father and Perses' was at that time dead; and that they had already divided his patrimony: but that he was only recently dead, or that this division had only just been made, does not follow from these allusions. On the contrary, it seems most reasonable to infer from them, that both these things had happened some time before. For it does not appear that any misunderstanding had arisen between the brothers about the first division of their patrimony; though it does appear from several allusions that some misunderstanding had afterwards

[v] Theogon. 277. [x] 183. [y] 493. [z] Aspis, 87. [a] v. 631.

arisen (and not long before) which had led to a suit at law, in which Hesiod complains that his brother, through the corruption of the judges, had gained an undue advantage. The explanation of all this, as far as we can make it out at present, seems to be that Hesiod and Perses having divided the paternal inheritance between them, Perses had squandered his share, and got into debt, and so been reduced to distress; that he had applied to his brother for relief, and had been relieved by him *once*; that he had come to him a second time, and had met with a denial: in consequence of which he had gone to law, hoping by undue influence with the judges to compel his brother to maintain him; who thereupon wrote this poem, entitled Works and Days, and dedicated it to Perses; exhorting him to get his living by *Working*—i. e. tilling the ground—rather than trust to such arts as those which he had lately been using for that purpose, and giving him rules and directions in the poem itself how to do so*.

With respect to his death, it seems to have been handed down uniformly that he came to his end by violence at a distance from his native place, and when he was living in a different part of Greece †. He was no doubt still living at

* If any one will carefully compare the various passages in the Works and Days which allude to the state of the case between Hesiod and Perses, when the poem was written, he will probably see reason to conclude that the above is a correct representation of it: though on such a subject no one could venture to be positive. See 27–41: 210–222: 266, 267: 272–284: 296–299: 310: 333: 392–402.

† Proclus gives the following account of his death: Page 7: cf. Opuscula De Homero, Ἀγὼν Ὁμήρου κ', τ. λ. p. xxvi–xxvii.

Μετὰ τὴν νίκην, ἣν αὐτὸν νενικηκέναι φασὶν ἐπὶ τῇ τελευτῇ Ἀμφιδάμαντος, εἰς Δελφοὺς ἐπορεύθη, καὶ ἐδόθη αὐτῷ οὑτοσὶ ὁ χρησμός·

> *Ἀλλὰ Διὸς πεφύλαξο Νεμείου κάλλιμον ἄλσος·*
> *κεῖθι δέ τοι θανάτοιο τέλος πεπρωμένον ἐστίν.*

Ὁ δὲ τὴν ἐν Πελοποννήσῳ Νεμέαν φυγὼν, ἐν Οἰνόῃ τῆς Λοκρίδος ὑπὸ Ἀμφιφάνους καὶ Γανύκτορος τῶν Φηγέως παίδων ἀναιρεῖται, καὶ ῥίπτεται εἰς τὴν θάλασσαν, ὡς φθείρας τὴν ἀδελφὴν ἐκείνων Κλυμένην, ἐξ ἧς ἐγεννήθη Στησίχορος. ἐκαλεῖτο δὲ ἡ Οἰνόη Διὸς Νεμείου ἱερόν (cf. Thucyd. iii. 96). *μετὰ δὲ τρίτην ἡμέραν ὑπὸ δελφίνων* (cf. Plutarch. De Solertia Anim. xxxvi.) *πρὸς τὸν αἰγιαλὸν ἐξήχθη τὸ σῶμα μεταξὺ Λοκρίδος καὶ Εὐβοίας, καὶ ἔθαψαν αὐτὸν Λοκροὶ ἐν Νεμέᾳ τῆς Οἰνόης. οἱ δὲ φονεῖς τούτου νηὸς ἐπιβάντες ἐπειρῶντο φυγεῖν, χειμῶνι δὲ διεφθάρησαν. Ὀρχομένιοι δὲ ὕστερον κατὰ χρησμὸν ἐνεγ-*

Ascra when he wrote the Works and Days; but, taking into account the tradition referred to supra, that Ascra itself was laid waste and its inhabitants put to death or dispersed, by the people of Thespiæ, some time *before* the death of Hesiod, yet *after* the composition of his Works and Days, the most reasonable conclusion we can come to is that this event must have happened soon after the Works and Days were written; and that it was this which drove him from his native home to become a sojourner in Acarnania or Locris, where he appears to have been living when he met with his death. The date of the Works and Days therefore having been determined to B.C. 569, that of the death of Hesiod may probably be determined to some time between B.C. 569 and B.C. 560.

κόντες τὰ Ἡσιόδου ὀστᾶ θάπτουσιν ἐν μέσῃ τῇ ἀγορᾷ, καὶ ἐπέγραψαν τάδε· (cf. Pausanias, ix. xxxviii. 3.)

> *Ἄσκρη μὲν πατρὶς πολυλήϊος, ἀλλὰ θανόντος*
> *ὀστέα πληξίππων γῆ Μινυῶν κατέχει*
> *Ἡσιόδου, τοῦ πλεῖστον ἐν ἀνθρώποις κλέος ἐστὶν,*
> *ἀνδρῶν κρινομένων ἐν βασάνοις σοφίης.*

ἐπέγραψε δὲ καὶ Πίνδαρος·

> *Χαῖρε δὶς ἡβήσας καὶ δὶς τάφου ἀντιβολήσας*
> *Ἡσίοδ', ἀνθρώποις μέτρον ἔχων σοφίης.*

Cf. Anthologia Græca, i. 81. Pindarus: i. 241. *Ἀλκαίου Μεσσηνίου*, xvii: Servius ad Eclog. vi. 78: Proclus ad Opera et Dies, 631: Tzetzes ibid. p.16,17: Parœmiographi Græci, e Cod. Bodl. 884. *Ἡσιόδειον γῆρας*: Suidas, *Ἡσιόδειον γῆρας.*

The traditionary accounts of his death however, in all but the fact itself, must have differed from each other. The names of his murderers, according to Eratosthenes, were Ctimenes and Amphus (Opuscula De Homero, supra), or Antiphus and Ctimenes (Suidas in *Ἡσίοδος*); and they were said to have been detected by the sagacity of his dog—instead of perishing in a storm: cf. Plutarch, De Solertia Anim. xiii. and Pollux, v. v. 2. § 42. p. 498. His death too is said to have been due to a mistake. Pausanias alludes to *this* account, while he recognises the other: ix. xxxi. 5: *Ἐναντία δὲ καὶ ἐς τοῦ Ἡσιόδου τὴν τελευτήν ἐστιν εἰρημένα. ὅτι μὲν γὰρ οἱ παῖδες τοῦ Γανύκτορος, Κτίμενος καὶ Ἄντιφος, ἔφυγον ἐς Μολυκρίαν ἐκ Ναυπάκτου, διὰ τοῦ Ἡσιόδου τὸν φόνον, καὶ αὐτόθι ἀσεβήσασιν ἐς Ποσειδῶνα ἐγένετο τῇ Μολυκρίδι σφισὶν ἡ δίκη, τάδε μὲν καὶ οἱ πάντες κατὰ ταὐτὰ εἰρήκασιν· τὴν δὲ ἀδελφὴν τῶν νεανίσκων οἱ μὲν ἄλλου τού φασιν αἰσχύναντος Ἡσίοδον λαβεῖν οὐκ ἀληθῆ τὴν τοῦ ἀδικήματος δόξαν· οἱ δὲ ἐκείνου γενέσθαι τὸ ἔργον.* (cf. Plut. Sept. Sap. Conviv. xix.) Why his remains were removed from Naupactus to Orchomenus, and how they were previously discovered there, he relates afterwards, ix. xxxviii. 3: cf. Proclus ad Opera et Dies, 631.

CHAPTER II.

On the Verification of the Calendar of Solon by the testimony of the Hymns of Homer.

SECTION I.—*Nature and effect of the argument derivable from this source.*

The Hymns, which have come down to our time under the name of Homer, are undoubtedly ancient compositions; the opinion which ascribed them to Homer is ancient also. Yet notwithstanding, the judgment of antiquity,* as well as of the learned in modern times, is positive that they could not have been the productions of Homer. These compositions are not deficient in poetical merit, but they have not such merit as is worthy of the genius of Homer. Their author or authors assumed the *persona* or mask of Homer, but they had caught little of the spirit and grace of the original. The style of these hymns too is perceptibly different from that of the Iliad and the Odyssey. The peculiar idioms, the metrical laws, the rhythm and harmony of these poems, and those of the genuine Homeric productions, are very different. Besides which, many allusions are observable in them, characteristic of a later age than the æra of the Iliad and the Odyssey. Many things appear to have been familiar to their authors, which were not yet matters of fact in the time of Homer; and argue a much later date in general than could possibly be assigned to the Iliad and the Odyssey[b].

These compositions however, being supposed to have been all the work of the same author, or at least written and made public about the same time; the most critical proof of their true date, and that to which we propose to confine ourselves at present, is furnished by two facts, each of them collected

* Opuscula de Homero, p. xiii. Anonymi Vita Homeri, § iii: Οὐδὲν δὲ αὐτοῦ θετέον ἔξω τῆς Ἰλιάδος καὶ τῆς Ὀδυσσείας. ἄλλα δὲ, καὶ τοὺς ὕμνους καὶ τὰ λοιπὰ τῶν εἰς αὐτὸν φερομένων ποιημάτων, ἡγητέον ἀλλότρια καὶ τῆς φύσεως καὶ τῆς δυνάμεως.

[b] See the note at the end of the chapter.

from the internal evidence of the Hymns themselves: i. That the form of the civil year, recognised by them, is not the *solar* but the *lunar*: ii. That the state of this civil lunar year, at the time when they were written, was such that the *fourth* of the civil lunar month was corresponding to the *seventeenth* of the natural. From these two facts, and especially from the latter, we are justified in concluding that the actual date of these Hymns in general (and certainly that of one of them in particular) must have been some time in the xiith cycle of the calendar of Solon, B. C. 504 to B. C. 496.

Section II.—*Proof from these Hymns that the form of the civil year, in the time of their authors, was not solar but lunar.*

i. Two remarkable lines occur twice in the Odyssey of Homer[c]:

> Ἀλλ' ὅτε δὴ μῆνές τε καὶ ἡμέραι ἐξετελεῦντο,
> ἂψ περιτελλομένου ἔτεος, καὶ ἐπήλυθον ὧραι—

the inference from which (as we hope to shew on a future opportunity) is, that in Homer's time the entire year was made up of a certain number of months, and of a certain number of days, over and above the last of those months; just as necessary to the full complement of the year as those months themselves, yet not included in any of them: and consequently that the civil year, in his time, was still the equable solar year, of which this is an exact description. These two lines occur in the Hymn to Apollo, with the change of one word only; which makes all the difference to the inference deducible from them. The author was speaking of the indignation of Hera, when she found that Jupiter had given birth to Athena, without her own cooperation; and how she abstained from his bed a whole year, until she too had given birth to Typhaon or Typhoëus[d]—

> Ἐκ τούτου δ' ἤπειτα τελεσφόρον εἰς ἐνιαυτὸν
> οὔτε ποτ' εἰς εὐνὴν Διὸς ἤλυθε μητιόεντος,
> κ', τ. λ.
> ἀλλ' ὅτε δὴ νύκτες τε καὶ ἡμέραι ἐξετελεῦντο,
> ἂψ περιτελλομένου ἔτεος, καὶ ἐπήλυθον ὧραι,
> ἡ δ' ἔτεκ'[e] κ', τ. λ.

No one can doubt that every thing else in both these lines

[c] Odyss, Λ. 293: Ξ. 293. [d] v. 343. [e] 349.

must have been taken *verbatim* from one or other of those two passages in the Odyssey. Why then was the most remarkable part of each, the *μῆνές τε καὶ ἡμέραι*, not quoted *verbatim* also; but in the modified form of *νύκτες τε καὶ ἡμέραι*? No doubt because, between the time of Homer and that of the author of this Hymn, a change in the civil year itself had taken place; which rendered a distinction like that, of a certain number of months, and a certain number of days over and above the last of those months, no longer applicable: in other words, because, between the time of Homer and that of this author, the civil year had become lunar. Yet the substitution of the second of these phrases, with the same purpose in view of defining thereby the sum total of the year in terms of the day and night, is a very good argument that all these days and nights, entering into the year, and making up its sum total alike, were still reckoned from evening in the time of this author, as they had always been in the time of Homer. The same thing is implied by an allusion in the Hymn to Hermes; in which too the night precedes the day.

> Καὶ χορὸν ἱμερόεντα καὶ ἐς φιλοκυδέα κῶμον
> εὐφροσύνην νυκτός τε καὶ ἤματος[f]. κ', τ. λ.

ii. One of these Hymns is addressed to Selene—i. e. the moon; beginning

> Μήνην ἀείδειν τανυσίπτερον ἔσπετε Μοῦσαι—

and she is more particularly described afterwards:

> Εὖτ' ἂν ἀπ' ὠκεανοῖο λοεσσαμένη χρόα καλὸν,
> εἵματα ἑσσαμένη τηλαυγέα, δῖα Σελήνη,
> ζευξαμένη πώλους ἐριαύχενας αἰγλήεντας,
> ἐσσυμένως προτέρωσ' ἐλάσῃ καλλίτριχας ἵππους,
> ἑσπερίη διχόμηνος, ὅτε πλήθει μέγας ὄγμος,
> λαμπρόταταί τ' αὐγαὶ τότ' ἀεξομένης τελέθωσιν
> οὐρανόθεν, τέκμωρ δὲ βροτοῖς καὶ σῆμα τέτυκται[g].

The most important part of this passage is the fourth line,

> Ἑσπερίη διχόμηνος, ὅτε πλήθει μέγας ὄγμος[h].

The proper sense of *διχόμηνος* is "Dividing the month," in contradistinction to that of "Dividing the moon;" the word for which was *διχοτόμος*, and the epoch of the civil lunation, (as

[f] v. 478.
[g] v. 7 sqq.
[h] Cf. Ælian, De Nat. Anim. xiii. 6. Ἦν δὲ διχόμηνος—absolutely for the middle of the month, or with the ellipsis of ἡ σελήνη.

the same with the natural,) denoted thereby, was either the end of the first quarter, the *luna octava*, or the beginning of the fourth, the *luna vicesima tertia*. No such descriptive epithet as this then could have begun to be applied to the moon, nor in fact is any where so applied, before the year had become lunar; and the course and succession of menstrual time had begun to be regulated by the moon: after which it might be, and in fact it is, applied indifferently to the moon or to the month, to the natural month or to the civil, the thing intended being simply the middle point of either; which of course, when the natural and the civil month were commensurate, was the point of the full moon, common to both. That such is the meaning of the epithet in the present instance appears from the conjunction with it of ἑσπερίη; for that implies that when the moon was διχόμηνος, in this sense, it rose in the evening, and therefore must have been at the full *. The conjunction then of two such epithets as these, of "Rising in the evening" on the one hand, and "Dividing the month" on the other, does as much recognise the existence of a lunar calendar in the time of the author of this description, as the same association both of ideas and of ex-

* The moon at the full is intimated also in the words, ὅτε πλήθει μέγας ὄγμος. This term ὄγμος properly denotes a line of some kind; and generally a straight line, such as is made in ploughing in the shape of the αὖλαξ or furrow. The lexicons derive it from ἄγω *duco*, as if it were the same with ἄγμος. But it does not necessarily mean a straight line. Any line of a well defined character might be denoted by it: a line described by a compass round a centre, (that is, the circumference of a circle,) would be an ὄγμος too. And though the commentators on the passage explain the ὄγμος here of the moon's orbit, the context requires the moon's *orb*; and the meaning of the words is not, When the mighty orbit is completed, but, When the mighty orb, the great circle, or round (of the moon's disc) is full or complete.

It is observable that in the 15th line of this Hymn Σελήνη is called the mother of Πανδεία by Zeus—

Ἡ δ' ὑποκυσσαμένη Πανδείην γείνατο κούρην—

a genealogy unknown to Hesiod, much more to Homer. Hyg. Fabb. i. Ex Jove et Luna Pandion: Corr. Pandia. The Πάνδια were a feast at Athens, which followed the Διονύσια: cf. Harpocration, and Hesychius, Πάνδια; which Phot. in voce, says was so called from Πανδία, the daughter of Selene: and Πανδία appears to have been a title of the moon herself. Cf. Schol. in Demosthenem, 193: Contra Midiam, 22. Μετὰ τὰ Πάνδια.

pression, under similar circumstances, in the time of Pindar; when no one can doubt that the calendar had long been lunar.

Ἐν διχομηνίδεσσι [i]
δὲ ἑσπέραις κ', τ. λ.

Another important part of the passage is the allusion in the last line,

Τέκμωρ δὲ βροτοῖς καὶ σῆμα τέτυκται—

from which it follows that the moon, either as generally here described, or under these particular circumstances of rising in the evening and dividing the month, was an index and sign of some kind. But an index and sign of what? And of what, but *Times* and *Seasons?* and such things as were indissolubly associated with them, *Feasts* and *Observances?* Thus it is that the author of the Book of Ecclesiasticus speaks of the moon, among his own countrymen: "From the moon is the sign (τέκμωρ καὶ σῆμα) of feasts [k]"—because their calendar was lunar, and their feasts and observances (all but that of the sabbath) were regulated by the moon. The same thing no doubt must have been intended in this Hymn; and the state of the case, virtually if not actually, recognised by such an allusion, is exactly that which Geminus supposed, when he told us it was the rule or principle of the Greeks from time immemorial to regulate their years by the sun, and their months and days by the moon.

iii. The birth of Hermes is dated in these Hymns on the fourth of the month; which would be consistent with the common opinion, as we have seen in the last chapter [l]. But this fourth of the month is specified as the τετρὰς προτέρα—

Τετράδι τῇ προτέρῃ, τῇ μιν τέκε πότνια Μαία [m].

A τετρὰς προτέρα would seem to imply a τετρὰς δευτέρα and a τετρὰς τρίτη: the former of which, according to the old rule of reckoning the days of the month, not yet obsolete in the time of Hesiod [n], would have denoted the 14th of the month, and the latter the 24th. But there can be little doubt that the true opposition intended here by the τετρὰς προτέρα is to the τετρὰς ὑστέρα—in the sense of the τετρὰς φθίνοντος, or 27th

[i] Isthmia, viii. 93.
[k] Chapter xliii. 7.
[l] Page 264, note iv.
[m] Hymnus ad Hermen, 19.
[n] Cf. page 261.

of the month. There was a double τετρὰς in the lunar month; the τετρὰς ἱσταμένου and the τετρὰς φθίνοντος: and the former being designated for any reason the τετρὰς προτέρα, the latter on the same principle must be designated the τετρὰς ὑστέρα. And though this would not be so common a designation for it as the τετρὰς φθίνοντος, it would be analogous to that of the δεκάτη ὑστέρα, for the δεκάτη φθίνοντος; as we have seen [o]. For what difference is there between the τετρὰς ὑστέρα in the sense of the τετρὰς φθίνοντος, and the δεκὰς or δεκάτη ὑστέρα in the sense of the δεκάτη φθίνοντος? And as the δεκάτη ὑστέρα in this sense was properly opposed to the δεκάτη προτέρα, the δεκάτη ἱσταμένου (the 10th of the month [p]), so would the τετρὰς ὑστέρα, in the corresponding sense of the 27th, be so to the τετρὰς ἱσταμένου, the τετρὰς προτέρα, the fourth of the month.

The peculiar style then of the Greek lunar month is clearly recognised in this Hymn to Hermes; and consequently the lunar calendar. And the same thing having been proved of the Hymn to Apollo and of the Hymn to Selene also; thus much may suffice for the confirmation of the first of our Propositions, That the civil year in the time of the author or authors of these Hymns was no longer solar, but already lunar. We will now pass to that of the second; The state of this lunar year itself, at the time in question: which, we have undertaken to shew, was such that the fourth of the civil lunar month was coinciding with the seventeenth of the natural; or thereabouts.

SECTION III.—*On the relation of the civil lunar month to the natural at the time of the composition of the Hymns.*

The means indeed of judging of this relation are furnished by the Hymn to Hermes only. The conclusion therefore, resulting from the proposed comparison of true lunar time with civil or calendar, is directly applicable to the date of this Hymn alone; unless it were known for certain, or might reasonably be taken for granted, that the rest also must have been written at the same time as this one. Whether they were so or not, in the absence of testimony *ab extra*, we could not venture to say; though as all these Hymns are ascribed

o Page 73. p See supra, page 270.

to Homer, and as far as their history can be traced backwards, appear to have constituted *one* collection, under *one* name and title, it would seem to be *a priori* most probable that some time or other they all appeared at once. There is an uniformity of style and manner in some of them, which could characterize only the productions of the same mind; and every thing considered, we should almost be warranted in concluding that though not the compositions of Homer, they were the work of some one author, who wrote most of them about the same time *. It is sufficient for our purpose however, if the date of one only can be determined by means of the evidence which we are proposing to adduce. How far the ascertained time of this one may be an argument of that of the rest, we leave to the judgment of the reader.

Now the action of this Hymn to Hermes, (if we may so call its proper argument,) embraces two, but only two days [q]. On the morning of the fourth day of the tenth month dated from his conception, he is supposed to have been born: by noon the same day he had invented the Chelys: before evening he had conceived a longing for meat, which led to his first exploit as the Prince and Patron of thieves: and it is with the account of this feat of his that the Hymn is almost entirely occupied:

> Τῇδ' ἤδη δέκατος μεὶς οὐρανῷ ἐστήρικτο,
> εἴς τε φόως ἄγαγεν, ἀρίσημά τε ἔργα τέτυκτο.
> καὶ τότ' ἐγείνατο παῖδα [r], κ', τ. λ.
>
> ———
>
> Ἠῷος γεγονὼς μέσῳ ἤματι ἐγκιθάριζεν,
> ἑσπέριος βοῦς κλέψεν ἑκηβόλου Ἀπόλλωνος,
> τετράδι τῇ προτέρῃ, τῇ μιν τέκε πότνια Μαῖα [s].

The execution of the design begins before the evening of this *τετρὰς προτέρα* [t]: and it is over before the morning of the

* Perhaps we should except from the rest the Hymn to Aphrodite—in which no traces of the lunar calendar are discoverable—but a very significant one of a solar calendar, regulated by the Julian Cycle of Leap-year. We may have occasion to explain this more at large, in reference to a future part of our subject: and in illustration of a Correction of the Primitive Solar calendar, to which we have not yet alluded.

[q] Cf. verses 17. 19. (cf. 11. 21. 46.) the 4th of the tenth month. Sunset that day, 67. cf. 197. 206. 340. Night, v. 97. 99. 141. 143. Morning of the 5th, 184. 273. cf. 370. 371. 376. Compare Apollodorus, Bibliotheca, iii. x. 2.

[r] v. 11.

[s] v. 17.

[t] Cf. v. 18. 68. 341. 97. 142. 197. 206. 184. 370. 371. 376. 273.

next day; and the sequel of the account, which takes up the rest of the poem, belongs entirely to the next day.

Now the circumstances under which this abduction of the cows of Apollo takes place are supposed to have been *these.* The whole herd were found by Hermes feeding in their usual pasture, but near their *αὖλος*, *stabulum*, or *stable*, which implies that though fed abroad in the day time they were made up at night.

> Ἠέλιος μὲν ἔδυνε κατὰ χθονὸς ὠκεανόνδε,
> αὐτοῖσίν θ' ἵπποισι καὶ ἅρμασιν· αὐτὰρ ἄρ Ἑρμῆς
> Πιερίης ἀφίκανε θέων ὄρεα σκιόεντα,
> ἔνθα θεῶν μακάρων βόες ἄμβροτοι αὖλιν ἔχεσκον
> βοσκόμεναι λειμῶνας ἀκηρασίους ἐρατεινούς [v].

The assumed time of the year then must have been in unison with this supposition; viz. not that when the cattle were kept night and day in the open air, (which could have been the case only in the spring and the summer,) but that, when they were turned out in the day time and shut up at night: which would be the case soon after the beginning of the autumnal quarter. And this is both illustrated and confirmed by the mode in which he is represented himself as disposing of his booty as soon as he has brought it home [x]; as he is supposed to do about the time of the rising of the moon [y].

> Τῆμος ἐπ' Ἀλφειὸν ποταμὸν Διὸς ἄλκιμος υἱὸς
> Φοίβου Ἀπόλλωνος βοῦς ἤλασεν εὐρυμετώπους·
> ἀδμῆτες δ' ἵκανον ἐς αὔλιον ὑψιμέλαθρον
> καὶ ληνοὺς προπάροιθεν ἀριπρεπέος λειμῶνος.
> ἔνθ' ἐπεὶ εὖ βοτάνης ἐπεφόρβει βοῦς ἐριμύκους,
> καὶ τὰς μὲν συνέλασσεν ἐς αὔλιον ἀθρόας οὔσας,
> λωτὸν ἐρεπτομένας ἠδ' ἐρσήεντα κύπειρον.

That is, they were not left in the open air for the night even in this new abode of theirs; but having first satisfied their appetite by pasturing out of doors for a while, they were made up in the stalls, with plenty of fodder for the night, in which situation they were found by Apollo the next day [z].

The allusion in this passage to the ληνοὶ, before the meadows in which the cows were thus permitted to graze, would be an

[v] v. 68. cf. 72–81: 198. 232. 340. 399. 500.
[x] 96–102. cf. 397–400.
[y] v. 97. 101.
[z] 397–403.

observable circumstance, if the term could be assumed to have had here its ordinary sense of *torcularia* or *winefats*: for that would imply that the vintage was still going on, or only just over, when Hermes came home with them*. But

* It cannot be denied that ληνὸς or ληνοὶ is very commonly used in Greek for a watering trough: though the proper term for that utensil is πίστρα[1].

Ἐγὼ δὲ πληροῦν πίστρα καὶ σαίρειν στέγας.

Διναέν θ' ὕδωρ ποταμῶν
ἐν πίστραις κεῖται πέλας ἄν-
τρων[2].

Hesychius: Πισμός· πιστὴρ, ποτίστρα, ληνός—Πιστήρ· ληνός—

Ἐν καὶ χρυσείας ὑποληνίδας ἐπλήσαντο
ὕδατος, ὄφρ' ἐλάφοισι ποτὸν θυμάρμενον εἴη[3].

Καὶ ἀμφορέας Αἰγυπτίους τέτταρας οἰνοχοήσας ἐς ληνὸν, ἀφ' ἧς ἔπινε τὰ ἐν τῇ κώμῃ πρόβατα[4]—Ῥάβδους βαλὼν Ἰακὼβ εἰς τὰς ληνοὺς τῶν ὑδάτων ἐγκισσῆσαι . . . . τὰ πρόβατα ἐπέτυχεν[5]. It was applied in fact to any thing which resembled a trough: a kneading trough[6]: the socket of the mast of a ship[7]: a coffin, or σοροποιὸν σκεῦος[8]: &c.

It is to be considered however, whether, as the site of this αὔλιον of Hermes was near the Alpheus, attention to propriety would have allowed the author to represent his cattle as watered out of troughs, placed at the entrance of their feeding places; and not out of the river close by. One of the scenes on the shield of Achilles[9] has for its subject a case of this kind; viz. cattle driven out of the stables, in the autumnal season, to be watered, not out of troughs, but out of the running stream, somewhere not far off, when they were attacked by lions. But be this as it may, it is clear from the context that the time of this adventure of Hermes, and consequently that of his birth, was the season of the year when cattle might be fed in the open air in the day time, but no longer at night. It is not necessary to prove that the rule of pastoral life among the Greeks, as well as every where else, was to tend the flocks and herds in the open air from the vernal equinox to the autumnal; and then to take them up at night and to turn them out only in the day time—until the beginning of winter—reckoned from the πλειάδων δύσις; when they began to be kept confined to the stalls both day and night. Q. Smyrnæus has a simile, borrowed from this rule for the interval in question, (during which the cattle were still kept abroad in the day time but brought home at night,) to describe the Greeks landing again from their ships, and marching under cover of the night to Troy[10]:

1 Euripides, Cyclops, 29.
2 Ibid. 46.
3 Callimachus, iii. Εἰς Ἄρτεμιν, 166.
4 Philostratus, Vita Apollon. vi. xiii. 303 D.
5 Justin M. Dialogus, 326. 10.
6 Pollux, x. xxiv. 1277. 102.
7 Ibid. i. ix. 3. p. 62. § 91.
8 Ibid. x. xxxi. 1334. 150.
9 Il. Σ. 575, 576.
10 xiii. 67.

it is indifferent to our argument whether it could or not. The inference from the whole description will still be the same; that the action of the Hymn, if action it may be styled, must have been laid in the autumn, not in the spring or summer: and consequently, as it is laid on the birthday of Hermes, it must have assumed he was born in the autumn, not in the spring or summer.

Now it is supposed, as we have seen, that he was born on the fourth day of the tenth month; and though this is reckoned the tenth from his conception, not absolutely and in the order of the calendar, yet if we consider that there was one month in the calendar sacred to marriage, and especially such marriages as the *θεογαμίαι,* and that month the first of all, (the month which in the Attic calendar was called Gamelion,) we shall see little reason to doubt but that the tenth month, reckoned from the conception of Hermes by Maïa, and the tenth absolutely and in the order of the calendar, in this instance, must have been the same; and neither more nor less than the month Pyanepsion, the tenth in the Attic calendar from Gamelion*. The action of the poem then, being laid on the fourth of the tenth month, must have been laid on the fourth of Pyanepsion: which is a very remarkable coincidence. For it is certainly laid, as we have seen, in one of the autumnal months, if not in one of the vintage months; and Pyanepsion would have answered to both[a]. The fourth of Pyanepsion in the calendar of Solon could never fall later than October 18, nor earlier than September 22: and the vintage

> Αὐτοὶ δ' αἶψ' ἐκβάντες ἐς Ἴλιον ἐσσεύοντο
> ἄτρομοι, ἠΰτε μῆλα περὶ σταθμὸν ἀΐσσοντα
> ἐκ νόμου ὑλήεντος ὀπωρινὴν ὑπὸ νύκτα·
> ὥς οἵγ' ἀνίαχοι Τρώων ποτὶ ἄστυ νέοντο.

* There can be little doubt too, in our opinion, that, whensoever this date of the birth of Hermes was first introduced among the Greeks, it was purposely fixed to the fourth of the tenth month, reckoned from the beginning of the primitive year (the primitive Gamelion), because the number of days in the equable solar calendar, from Gamelion 1 to Pyanepsion 4, both included, was exactly 274: the number commonly assigned (especially from the time of Pythagoras) to the period of uterogestation. See our Fasti Catholici, ii. 504.

[a] Cf. supra, 117 sqq.

could never begin much before the latter of these times, nor be over before the former.

It confirms this conclusion of the time of the year to which both the birth of Hermes and the argument of this hymn must have been accommodated: that when he was returning with his booty from Pieria. and had got as far as Onchestus, on the way to the Isthmus, an old man sees him pass by, whose occupation at the time is thus described—

> *Τὸν δὲ γέρων ἐνόησε, δόμων αἴθουσαν ἀλωὴν,*
> *ἱέμενον πεδίονδε δι' Ὀγχηστὸν λεχεποίην*[b].

We are not told the name of this old man; but Ovid, in his account of the same story, supplies that omission[c]—

> Senserat hoc furtum nemo nisi notus in illo
> Rure senex. Battum vicinia tota vocabant.

This same old man is discovered at his work, the next morning, by Apollo, when searching for his cows[d];

> *Ἔνθα γέροντα*
> *κνώδαλον εὗρε, νέμοντα παρὲξ ὁδοῦ ἕρκος ἀλωῆς.*

And he is then accosted by him in these terms[e]:—

> *Ὦ γέρον Ὀγχηστοῖο βατοδρόπε ποιήεντος*—κ', τ. λ.

And in his answer the old man describes his employment the day before accordingly[f]—

> *Αὐτὰρ ἐγὼ πρόπαν ἦμαρ ἐς ἠέλιον καταδύντα*
> *ἔσκαπτον περὶ γουνὸν ἀλωῆς οἰνοπέδοιο.*

And Hermes' address to him the day before was to the same effect[g]—

> *Ὦ γέρον ὅστε φυτὰ σκάπτεις ἐπικαμπύλος ὤμους*, κ', τ. λ.

Now to be digging in a vineyard, and especially to be making or repairing the fence of a vineyard, is characteristic of the season and proper occupations of autumn; particularly after the vintage, and after the cattle had been turned into the vineyards, to browse on the leaves, which was usually done as soon as the vintage was over. The employment then of this old man, Battus, both on the day of the birth and on the day after, is in character with the rest of the circumstances of the fable; all which determine it to one season of the natural year, the autumn.

[b] v. 87. [c] Metam. ii. 685—707. cf. 687. [d] v. 187.
[e] v. 190. cf. 184. 370, 371. [f] v. 206. [g] v. 90.

It appears however from his answer to Apollo that he had been so employed the day before until *sunset;* and *then* it was that he saw Hermes passing by with his booty. Before this time of the day then must Hermes have effected the theft[h]; and directly after have been arrived at Onchestus on his way home. Now it is observable that just at this juncture of time, (i. e. soon after his interview with the old man,) the night is supposed to have set in: and by and by the moon is described as rising: from which it follows that there was no moon at sunset, nor even at nightfall, as such: nor yet for some time, more or less, after that—

> Τόσσον φὰς συνέσευε βοῶν ἴφθιμα κάρηνα,
> πολλὰ δ' ὄρη σκιόεντα καὶ αὐλῶνας κελαδεινοὺς
> καὶ πεδί' ἀνθεμόεντα διήλασε κύδιμος Ἑρμῆς.
> ὀρφναίη δ' ἐπίκουρος ἐπαύετο δαιμονίη νὺξ,
> ἡ πλείων, τάχα δ' ὄρθρος ἐγίγνετο δημιοεργός.
> ἡ δὲ νέον σκοπιῆ προσεβήσατο δῖα Σελήνη
> Πάλλαντος θυγάτηρ Μεγαμηδείαο ἄνακτος·
> τῆμος ἐπ' Ἀλφειὸν ποταμὸν κ', τ. λ.[i]—

That is, he reached home with his booty just as the moon was rising; but after the night had some time set in *. And that this moon, which was rising as he came home, must have shone all the night afterwards, and consequently have been past (but not yet long past) the *full*, appears from the account next given, of his killing and flaying and dividing and roasting two of the cows which he had stolen[k], to make a banquet for himself: during the whole of which process, and until he obliterated, last of all, even the traces in the dust of what he had been doing, the moon was continuing to shine and to lend him the benefit of its light—

* There can be no question that the reading in the fourth line of this passage, *ἐπαύετο*, is corrupt, and that the context requires some word which implied not that the night was drawing to an end, but was just setting in—some such word, in short, as *ἐπόρνυτο*, *ἐπέσσυτο*, or the like. The general drift of the allusion to the night here, just after Hermes had left Onchestus, is that it now set in, conveniently for his purpose, which of course was concealment: the greater part of it, at least, i. e. so much as would not be encroached upon by the early twilight—here called the *ὄρθρος*—which nevertheless might be expected ere long, and would rouse people to their daily employments; which is the meaning intended by the epithet of *δημιοεργός*.

[h] v. 68 sqq. [i] v. 94 sqq. [k] v. 105–141.

Ἀνθρακιὴν δ' ἐμάρανε κόνιν δ' ἀμάθυνε μέλαιναν
παννύχιος· καλὸν δὲ φόως ἐπέλαμπε σελήνης [l].

The story of his adventures this night ends with the account of his returning to Kyllene, his birth place, and stealing quietly into his cradle, as if he had never left it [m]: consequently before the night itself could yet have been quite over. And when thus resuming possession of his bed, he is described as slipping through the door (as we might have said through the keyhole) as imperceptibly as an autumnal breeze, or a mist—

Διὸς δ' ἐριούνιος Ἑρμῆς
δοχμωθεὶς μεγάροιο διὰ κλήϊθρον ἔδυνεν,
αὔρῃ ὀπωρινῇ ἐναλίγκιος, ἠΰτ' ὀμίχλη [n]—

a comparison itself in keeping with the assumed season of the whole transaction—that of autumn, and very likely to have been suggested by it †.

If then this representation is consistent with itself, it follows from it that on the evening of the *fourth* of the tenth month, (or rather more strictly on that of the fifth,) some time after sunset, and some time after nightfall or the end of twilight too, the moon was rising and afterwards giving light for the whole of the night. Now this describes that epoch in the lunar synodic revolution at which it is one or two days past the full. If so, the relation of the civil to the natural lunar month, at the time to which this representation must have been accommodated, was such that the fifth of the former was falling on the seventeenth or eighteenth of the latter. Such is the relation of the civil lunar reckoning to the natural in the octaëteric cycle, 88 years after the Epoch [o]. Such consequently must have been the relation of the nominal lunar reckoning to the true in the calendar of Solon, Cycle xii. 1, B. C. 504, just 88 years after Cycle i. 1, B. C. 592.

† This comparison of Hermes to an ὀμίχλη or mist occurs in Homer, De Thetide—Il. A. 359:

Καρπαλίμως δ' ἀνέδυ πολιῆς ἁλὸς ἠΰτ' ὀμίχλη—

and the comparison of Athena (appearing to Nausicaa in a dream) to a breath of wind, occurs in the Odyssey, Z. 20:

Ἡ δ' ἀνέμου ὡς πνοιὴ ἐπέσσυτο δέμνια κούρης.

But this comparison of Hermes to a gale or breeze of the autumn, is peculiar to the Hymn.

[l] v. 140, 141. [m] v. 142–181. [n] v. 145.
[o] Cf. the Table, supra, p. 42.

In order to shew this, let us exhibit the scheme of the Attic calendar for that year.

Scheme of the Attic Calendar, Cycle xii. 1. *B. C.* 504.

Month.	Days.	Midn.	Month.	Days.	Midn.
i. Gamelion	29.. January	19	vii. Hecatombæon	29 .. July	15
ii. Anthesterion	30.. February	17	viii. Metageitnion	30 .. August	13
iii. Elaphebolion	29.. March	19	ix. Boëdromion	29 .. Sept.	12
iv. Munychion	30.. April	17	x. Pyanepsion	30 .. October	11
v. Thargelion	29.. May	17	xi. Mæmacterion	29 .. Novemb.	10
vi. Skirrhophorion	30.. June	15	xii. Posideon	30 .. Decemb.	9

Now there was a lunar eclipse B.C. 504, on January 20 at 11.30 a.m. Paris; and supposing the 16th *νυχθήμερον* of that moon to have begun Jan. 20 at 18 h., the 18th would have begun Jan. 22 at 18 h. on the 5th of Gamelion, reckoned by the Attic rule, from sunset; the 5th of Gamelion *ineunte*. This is demonstrative that at the beginning of Cycle xii. 1, the 5th of the civil lunar month was falling on the 18th of the true lunar month. On this principle Pyanepsion 5 *ineunte* the same year would be the 18th luna *ineunte* too: and that would be confirmed by our own lunar calendar also, Period xii. Cycle ix. 5, corresponding to B. C. 504, when the first of Nisan falling April 4 at midnight, the first of Tisri fell Sept. 28 at midnight, and the 17th October 14 at midnight, and the 18th, reckoned from sunset, October 14 at 18 h., Pyanepsion 5 *ineunte*.

We see then that B. C. 504, (and we may add for four years later at least,) the coincidence in question would hold good; viz. that the fifth of the civil lunar month, according to the ordinary mode of reckoning the *νυχθήμερον*, would correspond to the 18th of the natural, similarly reckoned. Unless therefore the whole of the above representation, minute and circumstantial as it is, was made at random, and neither had, nor was intended to have, any consistency whatsoever; the inference that the date of the Hymn, in which all these circumstances occur, was either this year B. C. 504, or some other in the decursus of this same cycle, B.C. 504–496, seems to be fairly deducible from it.

SECTION IV.—*On the author of the Hymn to Apollo, and his time.*

Whether however the date of this *one* Hymn may be supposed to include that of the rest, is another question; about which, as we have already observed, the reader must judge for himself. It is sufficient for the verification of the lunar correction of Solon, between B. C. 592 and B. C. 490, to have shewn from the testimony of *one* of these Hymns that the state of the calendar, recognised in that, was the state of this correction, B. C. 504—B. C. 496.

The first of this collection of Hymns is the Hymn to Apollo, and that was certainly older than the time of Thucydides, (who has quoted some lines of it, though with some differences of reading[p],) and was even old enough in his time to pass for a genuine production of Homer's. But this is no necessary proof of its absolute antiquity. Thucydides appeals to it merely in illustration of the fact of the celebration of games at Delos, long before the institution of the Delia in the sixth year of the Peloponnesian war. And even though this Hymn in particular was not older than B. C. 504, it might pass for a monument of unquestionable antiquity nearly an hundred years later; especially in an uncritical age, before either the time or the authorship of such productions could have been subjected to a close and searching examination. The practice of literary forgeries had begun long before. Onomacritus, according to Herodotus[q], was detected interpolating the remains of Musæus and Orpheus, with additions of his own, in the time of the Pisistratidæ, B. C. 527—B. C. 510: and Aristotle, according to Cicero[r], attributed all that was ascribed to Orpheus (of whose existence he himself doubted) to the invention of later times.

With regard to this *one* of the hymns, that to Apollo, the scholiast on Pindar tells us it was the composition of the first of the class of men known to history under the name of Ῥαψῳδοί: men who professed to recite or sing the Iliad and

[p] v. 146–173. cf Thucydides, iii. 104.

[q] Herod. vii. 6. cf. Pausanias, i. xxii. 7: Sextus Empiricus, iii. cap. iv. 135. § 30. Adv. Phys. ix. cap. v. 620. § 361: Tatian contra Græcos, lxii. 138: Clemens Alex. Strom. i. xxi. 131: Suidas. Ὀρφεύς.

[r] De Natura Deorum, i. 38, 107.

the Odyssey in public, accompanying the recitation with suitable action and gesticulation. They were the Ὑποκριταὶ of the poems of Homer, as the Ὑποκριταὶ, properly so called, were of the tragic or comic drama. The founders of this order, and those who appeared after them in the same character, assumed the name of Ὁμηρίδαι; as if they had been the lineal descendants of Homer, and had kept possession of his poems by right of inheritance. Ὁμηρίδας ἔλεγον τὸ μὲν ἀρχαῖον τοὺς ἀπὸ τοῦ Ὁμήρου γένους, οἳ καὶ τὴν ποίησιν αὐτοῦ ἐκ διαδοχῆς ᾖδον*· μετὰ δὲ ταῦτα καὶ οἱ ῥαψῳδοὶ, οὐκέτι τὸ γένος εἰς Ὅμηρον ἀνάγοντες. ἐπιφανεῖς δὲ ἐγένοντο οἱ περὶ Κύναιθον, οὕς φασι πολλὰ τῶν ἐπῶν ποιήσαντας ἐμβαλεῖν εἰς τὴν Ὁμήρου ποίησιν. ἦν δὲ ὁ Κύναιθος Χῖος, ὃς καὶ τῶν ἐπιγραφομένων Ὁμήρου ποιημάτων τὸν εἰς Ἀπόλλωνα γεγραμμένον ὕμνον λέγεται πεποιηκέναι. οὗτος οὖν ὁ Κύναιθος πρῶτος ἐν Συρακούσαις ἐραψῴδησε τὰ Ὁμήρου ἔπη κατὰ τὴν ἑξηκοστὴν ἐννάτην Ὀλυμπιάδα, ὡς Ἱππόστρατός φησιν[s]. If this date is correct, it is a remarkable confirmation of the conclusion to which we have come from the internal evidence of these poems themselves; for Olympiad lxix—here specified as the time of Κύναιθος, the first of the Rhapsodists—actually answers to B. C. 504–500 †.

† Numbers of productions on the same subjects as these Hymns ascribed to Homer (some more ancient, others less so,) were no doubt once in existence. Pausanias mentions an hymn to Hermes, by Alkæus[1], in which also he was represented as stealing the cows of Apollo; so that the argument of that must have been the same in general with this which we have just been considering: and as Alkæus was much older than this hymn (B. C. 504) the author of the latter might have borrowed from that of Alkæus.

The oldest hymns in general known to Pausanias appear to have been those of Pamphus; an older poet than Sappho, and consequently than Alkæus; much more than Hesiod: and what he says of these we may

[s] Ad Nem. ii. 1. Cf. of Kynæthus again, under Ἄλλως. Also Eustath. ad Il. A. 6. 17 and 39. De Rhapsodis cf. ad Isth. iv. 63: Schol. in Platon. ii. 333. ad Ion. 171. 5: Phot. Lex. Suidas, and Etym. M. in ῥαψῳδοί: Hesych. and Etym. M. Ἀρνῳδοί.

* Harpocration, Ὁμηρίδαι· γένος ἐκ Χίου, ὅπερ Ἀκουσίλαος ἐν γ', Ἑλλάνικος ἐν τῇ Ἀτλαντιάδι, ἀπὸ τοῦ ποιητοῦ φησιν ὠνομάσθαι. Seleucus, ἐν β' περὶ βίων, gave a different account of the origin of the name. Strabo, xiv. i. 183: Ἀμφισβητοῦσι δὲ καὶ Ὁμήρου Χῖοι, μαρτύριον μὲν τοὺς Ὁμηρίδας καλουμένους, ἀπὸ δὲ τοῦ ἐκείνου γένους, προχειριζόμενοι, ὧν καὶ Πίνδαρος μέμνηται·

Ὅθεν περ καὶ Ὁμηρίδαι κ', τ. λ.
Nemea, ii. 1.

[1] vii. xx. 2.

have occasion to consider on a future opportunity. To confine ourselves at present to these hymns ascribed to Homer. Whether they were published avowedly in the name of Homer, as we have already observed, is not discoverable from any thing in them at present: and yet as the ancients refer them either collectively, or in particular instances, to Homer, it seems only reasonable to suppose that they had good grounds for believing that they appeared from the first under his name. It must always, at least, have been an obvious inference from the well known passage of the hymn to Apollo (or as it is sometimes called the Delian Hymn), that the writer of that hymn was assuming the character of Homer, and speaking there in his person.

Now, an author who was assuming the person of Homer might be expected to make use of the acknowledged productions of Homer; and even the more so, because Homer himself is often found repeating the same sentiments; sometimes in the same words. It is not therefore a necessary proof that the author of these Hymns was later than Homer, and purposely borrowed from him, that whole lines, and sometimes several such in succession, appear in these Hymns, word for word the same with others in the Iliad or the Odyssey. For example, in the hymn to Apollo, 451–455—the same with Od. Γ. 71–74. There are however certain peculiarities of the genuine Homeric writings which appear to have been transferred to these Hymns solely to keep up the character in which their author was professing to write: peculiarities, which had a real meaning and propriety in the time of Homer, but had already become obsolete by the time of the author or authors of the Hymns—if they were later than the change of the calendar. Such, for instance, was Homer's idiomatic use of the number *nine*: an use which these Hymns also affect: as in the account of the pains of Leto, or Latona, before she gave birth to Apollo—

> Λητὼ δ' ἐννῆμάρ τε καὶ ἐννέα νύκτας ἀέλπτοις
> ὠδίνεσσι πέπαρτο [2]—

And in that of the wanderings of Demeter in search of the Κόρη—

> Ἐννῆμαρ μὲν ἔπειτα κατὰ χθόνα πότνια Δηὼ
> στρωφᾶτ', αἰθομένας δάϊδας μετὰ χερσὶν ἔχουσα,
> .. ..
> ἀλλ' ὅτε δὴ δεκάτη οἱ ἐπήλυθε φαινόλη ἠὼς κ', τ. λ. [2]

And here we may observe that this epithet φαινόλη and this phrase of φαινόλη ἠὼς are unknown to Homer; but in one of the fragments of Sappho φαινόλις αὐὼς occurs in terms [3]. Particular phrases too, illustrative of the nature of the civil year in Homer's time, and, as used by him, both significant and appropriate, are found in these Hymns also; such as τελεσφόρον εἰς ἐνιαυτὸν [4], περιπλομένων ἐνιαυτῶν [5], ἔτεος περιτελλομένοιο [6], of which, in the time of these Hymns, it may well be doubted whether

[2] Ad Apollin. 91.
[3] Ad Demetr. 47.
[3] See supra, page 239. note.
[4] Ad Apollin. 343: ad Hephaist. 6.
[5] Ad Demetr. 265.
[6] Ibid. 445.

they had any relevancy, or answered any purpose but that of personating Homer—by adopting his characteristic phraseology. Let us specify however, not instances of *agreement* between these Hymns and Homer, but instances of *disagreement:* from which it may be inferred that they must have been composed *after*, and probably *long after*, the time of Homer.

In the Hymn to Apollo[7], Ortygia is distinguished from Delos, though according to Homer it was the same island under a different name; and Artemis is supposed to have been born in Ortygia, Apollo in Delos. In the same Hymn the name of the Peloponnese (unknown to Homer[8]) occurs repeatedly[9]. Εὐρώπη, the name of the continent so called, is unknown to Homer[10], but it occurs in this Hymn[11]. Λάκων, or Λάκωνες, is unknown to Homer, but πὰρ δὲ Λακωνίδα γαῖαν occurs in this Hymn[12]. Samos, the island in the Ægean, was known to the author of this Hymn[13], but not yet to Homer[14]. So also Κνίδος[15], not yet founded in the time of Homer[16]. The derivation of Πυθὼ, (as the original name of Delphi,) from the rotting (πύθειν) of the serpent Pytho, is strange to Homer; but is recognised in this Hymn[17]. The distinction of δεῖπνον and δόρπος is never confounded in Homer; in these Hymns they are used promiscuously[18]. Polydectes, or Polydegmon, as a name of Pluto, is unknown to Homer, but it occurs repeatedly in the Hymn to Demeter[19]. Ἰηπαιήων is a name for Apollo in these Hymns, which, both in itself and in the reason assigned for it[20], is totally unknown to Homer. In the Ode to Hermes, Mnemosyne is the mother of the Muses[21]; which could not have been learnt from Homer, though it might from Hesiod. Selene, in the same Hymn, is the daughter of Pallas, the son of Megamedes[22], a genealogy unknown to Hesiod, much more to Homer. In the Hymn to Aphrodite, the Sileni are mentioned[23], whereas even one Silenus was a stranger to Homer. The distinction too, drawn in this Hymn[24], between the Phrygian language and the Trojan, is not characteristic of Homer; and in the same Hymn the account of the Dryads, as living as long as the trees supposed to have sprung up at their birth, might possibly have been obtained from Hesiod[25], but certainly not from Homer.

The author of these Hymns has imitated Homer's comparison of instantaneous change of place to the quickness of a thought of the human mind; twice in that to Apollo[26], once in that to Hermes[27]. In the Hymn to Apollo, this line occurs[28],

Πρὸς δὲ τόδε μέγα θαῦμα ὅτου κλέος οὔποτ' ὀλεῖται—

7 v. 16.
8 See supra, p. 217.
9 v. 2;0 290. 419. 430. 432.
10 Cf. Steph. Byz. Ἀσία.
11 v. 251. 291.
12 v. 410.
13 41.
14 Strabo, x. ii. 340. a.
15 Ad Apollin. 43.
16 Strabo, xiv. ii. 195 b.
17 363–374.
18 Cf. ad Demetr. 127–129: ad Apollin. 441–497. 511.
19 v. 9. 17. 31. 430.
20 Ad Apollin. 272. 500. 517.
21 428.
22 v. 99, 100.
23 263.
24 113–116.
25 Cf. supra, page 231. note.
26 186. 448.
27 43.
28 156.

the end of which was evidently taken either from the Iliad,

ὄψιμον ὀψιτέλεστον, ὅου κλέος οὔποτ' ὀλεῖται[30],

or from the Odyssey,

Ἀντίθεον Πολύφημον, ὅου κράτος ἐστὶ μέγιστον[31].

And it is remarkable that ὅου is changed into ὅτου, which is not found in Homer; though ὅτῳ is once[32]. The phrase ὅστις ὁ παῖς ("whosoever the child be,") and αἵτινες αἱ βόες ("whatsoever the cows be,") occurs in the Hymn to Hermes[33]; but neither that, nor any thing like it, in Homer. In the Hymn to Aphrodite, 58–63 are the same with Od. Θ. 362–366; but Homer's epithet of θυήεις is changed into that of θυώδης, an epithet of frequent occurrence in these Hymns[34], whereas θυήεις occurs only once[35]. The account of Hephaistus his being cast into the sea by his mother[36], as put into the mouth of Hera, was evidently taken from that in the Iliad[37], misunderstood. The Eleusinian Mysteries are no where distinctly alluded to by Homer; nor even implicitly recognised: yet their institution is the argument and final end of the Hymn to Demeter. The Delphian oracle is simply recognised in the time of Homer—and even then only under the name of Πυθώ—but its foundation is the principal topic of the Hymn to Apollo: and the author of this Hymn was well aware of the Mythus, or Fable, of the appearance of Apollo to a colony of Cretans, in the form of a dolphin; which had not yet been heard of in the time of Homer.

One argument in particular of the lateness of these Hymns, relatively to the time of Homer at least, is supplied by the fact, supposed in the Hymn to Hermes; viz. that the chelys, or shell, invented by him on the day of his birth, was furnished with seven strings from the first—

Ὣς ἄμ' ἔπος τε καὶ ἔργον ἐμήδετο κύδιμος Ἑρμῆς.
πῆξε δ' ἄρ' ἐν μέτροισι, ταμὼν δόνακας καλάμοιο,
πετρήνας διὰ νῶτα κραταιρίνοιο χελώνης.
ἀμφὶ δὲ δέρμα τάνυσσε βοὸς πραπίδεσσιν ἑῇσι,
καὶ πήχεις ἐνέθηκ', ἐπὶ δὲ ζυγὸν ἤραρεν ἀμφοῖν·
ἑπτὰ δὲ συμφώνους ὀΐων ἐτανύσσατο χορδάς[38].

The history of the strings of the lyre, (under which the χέλυς, testudo, or shell, is included,) i. e. their original number, and the additions made to it at different times, according to the ancients, appears to have been this. The lyre at first had only two strings. The third string was first added in Ἀσία, a city of Lydia, so called[39]; according to the Scholiast on the Vespæ of Aristophanes[40], by Simonides, (son of Leoprepes,) between Ol. lvi. and lviii. The fourth, according to the Incertus Auctor apud Censorinum[41], was added by Linus, son of Apollo: and, according to

30 B. 325.
31 A. 70.
32 Il. M. 428.
33 209. 277. 311. cf. ad Demetr. 134.
34 Ad Apollin. 87. 184: ad Herm. 322: ad Demetr. 231. 244. 288. 331. 355. 385.
35 Ad Herm. 237.
36 Ad Apollin. 317–322.
37 Σ. 394–399.
38 v. 46: cf. Bion. Idyll. iii. 7: Etym. M. Χέλυς.
39 Steph. Byz. Ἀσία.
40 Ad v. 1402: cf. Suidas in Σιμωνίδης.
41 Cap. xii.

Pausanias[41], these four were increased to seven, by the addition of three at once; which he attributes to Amphion.

With respect to each of these statements, *per se, fides penes auctores sit.* With regard to any number of strings greater than three or four; testimony is unanimous that these successive improvements were the work of three musicians, Terpander, Phrynis, and Timotheus, the two former natives of Lesbus, (Terpander of Antissa[42], Phrynis of Mitylene,) Timotheus of Miletus[43], each of whom contributed his share to the ultimate perfection of this one instrument. Hence it was that Aristotle observed in his Metaphysica[44]: *Εἰ μὲν γὰρ Τιμόθεος μὴ ἐγένετο πολλὴν ἂν μελοποιίαν οὐκ εἴχομεν. εἰ δὲ μὴ Φρῦνις Τιμόθεος οὐκ ἂν ἐγένετο*: because, as the Scholiast remarks[45], *ἀρχαιότερος* (*γὰρ*) *Φρύνις Τιμοθέου, ὃς καὶ τὴν ἀρχὴν εὗρε τῆς μελοποιΐας.*

Suidas: *Τέρπανδρος· ὃς πρῶτος ἑπτὰ χορδῶν ἐποίησε τὴν λύραν*[46]. Septem chordis additis a Terpandro (*ita leg.*) octavam Simonides addidit, nonam Timotheus[47]—

Τόν ῥα Τέρπανδρός ποθ' ὁ Λέσβιος εὗρε
πρῶτος ἐν δείπνοισι Λυδῶν
ψαλμὸν ἀντίφθογγον ὑψηλᾶς ἀκούων πηκτίδος[48]—

Ὁμοίως δὲ καὶ Μελανιππίδης ὁ μελοποιὸς ἐπιγενόμενος οὐκ ἐνέμεινε τῇ προϋπαρχούσῃ μουσικῇ· ἀλλ' οὐδὲ Φιλόξενος οὐδὲ Τιμόθεος. οὗτος γὰρ, ἑπταφθόγγου τῆς λύρας ὑπαρχούσης ἕως εἰς Τέρπανδρον τὸν Ἀντισσαῖον, διέρριψεν εἰς πλείονας φθόγγους[49]—*Καὶ Τέρπανδρον δὲ τῆς αὐτῆς μουσικῆς τεχνίτην* (as Arion) *γεγονέναι φασὶ, καὶ τῆς αὐτῆς νήσου, τὸν πρῶτον ἀντὶ τῆς τετραχόρδου λύρας ἑπταχόρδῳ χρησάμενον. καθάπερ καὶ ἐν τοῖς ἀναφερομένοις ἔπεσιν εἰς αὐτὸν λέγεται·*

Σοὶ δ' ἡμεῖς τετράγηρυν ἀποστρέψαντες ἀοιδὴν
ἑπτατόνῳ φόρμιγγι νέους κελαδήσομεν ὕμνους[50].

41 ix. v. 4.

42 Cf. Steph. Byz. *Ἄντισσα*: Plutarch, de Musica, xxxi: Clem. Alex. Strom. i. xvi. § 78. p. 55. l. 31: Hesychius, *Λέσβιος ᾠδός*: *Μετὰ Λέσβιον ᾠδόν*: Eustathius, ad Iliad. I. 129: 741. 15: Suidas, *Μετὰ Λέσβιον ᾠδόν*: *Νόμος*: *Ὄρθιον νόμον*: Phot. Lex. *Νόμος*: Parœmiographi Græci, Zenob. Centur. v. 9. 341: cf. 71. e Cod. Bodl. 596: 74. ibid. 627: 149. e Cod. Coisl. 333.

43 Cf. Steph. Byz. *Μίλητος*: Anthol. Græca, i. 208. Alex. Ætoli iv: Macrob. Sat. v. 22. 148: Athenæus, xiv. 40.

44 Operum ii. 993. 15: Metaphysica, A. 10. *ἔλαττον*. i.

45 592. 5 *a*.

46 Cf. Hesychius, *ἑπτάχορδα*.

47 Pliny, H. N. vii. 57. 292.

48 Pindar. Fragm. *Ἐπινίκια*, iv: De Barbito, apud Athen. xiv. 37.

49 Plutarch, de Musica, xxx.

50 Strabo, xiii. 2. 139 *b*. These lines are quoted also in the Anecdota Græca Parisiensia, i. 56. 10: *Ἐκ τῶν Πάππου*—

Καθάπερ Τέρπανδρος καὶ Ἴων· ὁ μὲν γάρ φησιν·

Ἡμεῖς τοι τετράγηρυν ἀποστέρξαντες ἀοιδὰν
ἑπτατόνῳ φόρμιγγι νέους κελαδήσομεν ὕμνους.

ὁ δὲ (*Ἴων* scil.)

Ἐν δεκαχόρδῳ λύρᾳ τὴν δεκαβάμονα τάξιν ἔχεις ἀεὶ
τᾶς συμφωνούσας ἁρμονίας τριώδους.
Πρὶν μέν σ' ἑπτάτονον ψάλλον δεκατέσσαρα πάντες
*Ἕλληνες σπανίαν μοῦσαν ἀειράμενοι**.

* Corrige—*Πρὶν μέν σ' ἑπτάτονον ψάλλον διατέσσαρα πάντες*
Ἕλληνες σπανίαν μοῦσαν ἀειράμενοι·
νῦν δὲ λύρα δεκάχορδος ἔχεις διαβάμονα τάξιν
τῆς συμφωνούσας ἁρμονίᾳ τριάδος.

Terpander, according to Proclus[51], was the first who perfected the Nome, *ἡρῴῳ μέτρῳ χρησάμενος*. Then Arion of Methymne: *Φρῦνις δὲ ὁ Μιτυληναῖος*, he continues, *ἐκαινοτόμησεν αὐτόν· τό τε γὰρ ἑξάμετρον τῷ λελυμένῳ συνῆψε, καὶ χορδαῖς τῶν ζ΄ πλείοσιν ἐχρήσατο. Τιμόθεος δὲ ὕστερον εἰς τὴν νῦν αὐτὴν ἤγαγε τάξιν*[52]—*Ὁ Φρῦνις κιθαρῳδὸς Μυτιληναῖος. οὗτος δὲ δοκεῖ πρῶτος κιθαρίσαι παρὰ Ἀθηναίοις καὶ νικῆσαι Παναθηναίοις, ἐπὶ Καλλίου ἄρχοντος. ἦν δὲ Ἀριστοκλείδου μαθητής· ὁ δὲ Ἀριστοκλείδης . . . τὸ γένος ἦν ἀπὸ Τερπάνδρου κ΄, τ. λ.*[53] The improvements which this musician introduced into the ancient music were criticised by several judges as corruptions: *Καθὸ πρῶτος τὴν ἁρμονίαν ἔκλασεν ἐπὶ τὸ μαλακώτερον*[53]: and Plutarch, in the life of Agis[54], relates how one of the ephors at Sparta, a contemporary of Phrynis', cut the strings of his lyre, when he appeared with its improvements, to contend in the musical games—the lyre from the time of Terpander having had only seven strings, and Phrynis having made them nine—though the testimony of Ion, quoted supra, implies that it had already ten strings in his time. As to the time of Phrynis, Callias was archon B. C. 456: but the xxixth Panathenaic cycle, dated from the epoch of B. C. 566, would be current B. C. 454.

In like manner Timotheus added a tenth and an eleventh to the nine of Phrynis[55]. This addition too was stigmatized by the Spartans; and the decree, which condemned it as a corruption of the ancient music, in the Spartan dialect of the time, is still extant[56]—Si quidem illa severa Lacedæmon nervos jussit, quod plures quam septem haberet, in Timothei fidibus demi[57]: and Pausanias tells us the instrument so treated was still to be seen in the *Σκιὰς* at Sparta[58]: *Ἐνταῦθα ἐκρέμασαν Λακεδαιμόνιοι τὴν Τιμοθέου τοῦ Μιλησίου κιθάραν, καταγνόντες ὅτι χορδαῖς ἑπτὰ ταῖς ἀρχαίαις ἐφεῦρεν ἐν τῇ κιθαρῳδίᾳ τέσσαρας χορδάς.*

The state of the case then with respect to the strings of the lyre at different times was this: That whether it had two, or three, or four from the first—it had not seven at least before the time of Terpander: nor nine before that of Phrynis; nor eleven before that of Timotheus. With respect to the age of Terpander; the Parian Chron. dates his improvements,

51 Chrestomathia, apud Phot. Cod. 239. pag. 320. 5.

52 Cf. Plutarch, De Musica, xxx. the quotation from *Φερεκράτης*.

53 Scholia ad Nubes, 967.

54 Cap. x. Cf. De Profectibus in Virtute, xiii. In the life of Agis he calls this ephor *Ἐκπρέπης*—Apophthegm. Laconic. v. iii. he calls him *Ἐμπρέπης*. Institt. Lacon. xvii. he relates that on some occasion the ephors fined Terpander also, and caused his harp to be nailed to the wall, *ὅτι μίαν μόνην χορδὴν ἐνέτεινε περισσοτέραν*.

55 Suidas, *Τιμόθεος*. Cf. in *Ἀλέξανδρος*. *Ὀρθιασμάτων*.

56 Cf. Chishull Antiquitates Asiaticæ, p. 128.

57 Cicero, De Legibus, ii. 15, 39.

58 iii. xii. 8. Yet with this statement of the treatment of the lyre of Timotheus, cf. the following in Athenæus, xiv. 40, from Artemo, *ἐν τῷ πρώτῳ περὶ Διονυσιακοῦ συστήματος. Τιμόθεόν φησι τὸν Μιλήσιον παρὰ τοῖς πολλοῖς δόξαι πολυχορδοτέρῳ συστήματι χρήσασθαι τῇ μαγάδι. διὸ καὶ παρὰ τοῖς Λάκωσιν εὐθυνόμενον ὡς παραφθείροι τὴν ἀρχαίαν μουσικὴν, καὶ μέλλοντός τινος ἐκτέμνειν αὐτοῦ τὰς περιττὰς τῶν χορδῶν, δεῖξαι παρ' αὐτοῖς ὑπάρχοντα Ἀπολλωνίσκον, πρὸς τὴν αὐτοῦ σύνταξιν ἰσόχορδον λύραν ἔχοντα, καὶ ἀφεθῆναι.*

Epoch xxxv. B. C. 645[59]: but even that is too late, if he won the first prize at the celebration of the Carnea, Ol. xxvi. B. C. 676[60]—(of which more on a future opportunity.) An invention however of so ancient a date, as B. C. 676 or even B. C. 645, might well be supposed, when the Hymn to Hermes was written (B. C. 504 or later), to have gone back time out of mind *. Yet ancient as that date itself might appear B. C. 504—it was more than two hundred years later than Homer. We are not aware of any passage in the Iliad or the Odyssey, which might imply what number of strings the lyre had in his time. He uses the word *φόρμιγξ* or *κίθαρις*, not that of *λύρα* or *κιθάρα*, for the instrument itself; and applies to it the epithets of *καλὴ, δαιδαλέη, λιγυρὴ, λιγεῖα, γλαφυρὴ*, and the like, but none compounded of *χόρδος*, or *τόνος*, or *γλῶσσα*, or *φωνή*. If however it had not *de facto* seven strings before the time of Terpander, it could not have had more than four in his time; and the author of the Hymn to Hermes, writing under the name of Homer, betrays the lateness of his own age in comparison of that of Homer, by his inattention to that distinction, as plainly as by any thing.

59 Cf. Eusebius, Chron. Arm. Lat. i. 285. Ol. xxvi: Jerome in Chronico, Ol. xxxiii. 2.

60 Athenæus, xiv. 37. cf. Plutarch, De Musica, iv: v: vi: vii: ix: x: xxviii: xlii. Clem. Alex. Strom. i. xvi. 78. p. 55. l. 30: xxi 131. 88. l. 25–89. 3. Lib. vi. xi. 88. 151. 20: xvi. 154. 388. 5.

* It was no doubt the great antiquity of this addition, first made by Terpander, which made the poets and others of later times endow the lyre with seven strings from the first (as Pindar, Nemea, v. 43: Callimachus, Hymnus in Delum, 249 sqq.: Lucian, i. 223. Deorum Dialogi, iv. 80: Opuscula Myth. Eratosthenes 24, De Lyra: cf. Scholia in Pindar. Argumentum ad Pythia: and ad Olympia, i. 24. 26:) or from the time of Amphion, (Philostratus Junior, i. 747. B. Icones, Amphion:) or from that of Orpheus, (Virgil, Æneid vi. 646. Lucian, Opp. ii. 364: De Astrologia, 10, 95: Isidore, Origines, iii. 21. 27 A.)

DISSERTATION II.

PART II.

On the Verification of the Calendar of Solon.

From the date of the Battle of Marathon to the date of the Metonic Correction.

CHAPTER I.

On the date of the Battle of Marathon.

SECTION I.—*On the civil or calendar date of the Battle, the 6th of Boëdromion.*

THOUGH the date of the battle of Marathon, in terms of the Attic Calendar for the time being, has not been handed down by any authority older than Plutarch; Plutarch's testimony is competent to authenticate it: especially as the date which he assigns it is corroborated by circumstantial evidence, the knowledge of which we do not owe to him alone.

Preliminary to the comparison of this date with our own calendar, we propose to establish two propositions: i. That the battle of Marathon was fought on the 6th of Boëdromion: ii. That the battle of Marathon was fought on the day of the full moon: from which it will follow, that the 6th of Boëdromion, in the year of Marathon, was the date of the full moon also.

i. That the date of the battle was the 6th of the month Boëdromion. i. Τοῦτο δ' αὖ πάλιν, Πέρσαι μηνὸς Βοηδρομιῶνος ἕκτῃ μὲν ἐν Μαραθῶνι, τρίτῃ δ' ἐν Πλαταιαῖς ἅμα καὶ περὶ Μυκάλην, ἡττήθησαν ὑπὸ τῶν Ἑλλήνων, πέμπτῃ δὲ φθίνοντος ἐν Ἀρβήλοις[t]—Ἀλλὰ ἕκτῃ μὲν ἱσταμένου Βοηδρομιῶνος ἐσέτι νῦν τὴν ἐν Μαραθῶνι νίκην ἡ πόλις ἑορτάζει[v]. These two testimonies may suffice for the confirmation of our first proposition. There is a third in Plutarch, to the same effect: but as it tends directly to the proof of our second proposition, we reserve it for that purpose*.

* A further argument of the date of the battle, as the 6th of some month or other, is supplied by the fact of the vow to Artemis surnamed Ἀγροτέρα, before the battle; of which Plutarch gives the following account[1]—Ἀπαγγείλας δὲ τὴν ἐν Μαραθῶνι μάχην ὁ Ἡρόδοτος ὡς μὲν οἱ πλεῖστοι λέγουσι, καὶ τῶν νεκρῶν τῷ ἀριθμῷ καθεῖλε τὸ ἔργον. εὐξαμένους γάρ φασι τοὺς Ἀθηναίους τῇ Ἀγροτέρᾳ θύσειν χιμάρους ὅσους ἂν τῶν βαρβάρων καταβάλωσιν, εἶτα μετὰ τὴν μάχην ἀναρίθμου πλήθους τῶν νεκρῶν ἀναφανέντος, παραιτεῖσθαι ψηφίσματι τὴν θεὸν, ὅπως καθ' ἕκαστον ἐνιαυτὸν ἀποθύωσι πεντακοσίας τῶν χιμάρων.

This vow is not mentioned historically by Herodotus; but the inconsistency between his statements and the vow in question, intended by Plutarch, is this; that the numbers which fell in the battle are represented by him at 6400 only[2], the number of victims, which the Athenians were bound to offer, was so great that even at the rate of 500 a year they had scarcely been able to clear off the score. And here, we may compare the following of Xenophon's—which both illustrates and confirms the statement of Plutarch in this respect[3]: Καὶ εὐξάμενοι τῇ Ἀρτέμιδι ὁπόσους ἂν κατακάνοιεν τῶν πολεμίων, τοσαύτας χιμαίρας καταθύσειν τῇ θεῷ, ἐπεὶ οὐκ εἶχον ἱκανὰς εὑρεῖν, ἔδοξεν αὐτοῖς κατ' ἐνιαυτὸν πεντακοσίας θύειν· καὶ ἔτι καὶ νῦν ἀποθύουσι. The date of this speech in the Anabasis was B.C. 401, 89 years after the battle of Marathon; so that from B.C. 490 to this time, at the rate of 500 kids a year, 44,500 must already have been sacrificed. The numbers consequently which had perished on the side of the Persians, could not have been less than 44,500.

Of the apparent inconsistency between this fact and the statement of Herodotus, something may be said by and by. At present we may observe, that this vow, which Xenophon and Plutarch attribute to the Athenians generally, the scholiast on Aristophanes[4] ascribes to the Polemarch Callimachus in particular; and it may be inferred from Pollux[5] that the scholiast was probably in the right, because it was the duty of the Polemarch (before giving battle) to sacrifice to the Ἀγροτέρα[6]: Ὁ δὲ πολέμαρ-

t Plutarch, Camillus, xix.

v De Gloria Atheniensium, vii.

1 De Herodoti Malignitate, xxvi.

2 vi. 117.

3 Anabasis, iii. ii. 12. cf. Libanius, i. 235. 10–17. Oratio v. Ἄρτεμις: Agathias, ii. 10. 85. 20—86. 7.

4 ad Equites, 657.

5 viii. ix. 4. 91. 910.

6 Cf. of the Ἀγροτέρα, Pollux, ix. ii. 982: Schol. in Platon. ii. 312. Phædrus, 6, 9: Hesychius, Ἄγραι: Steph. Byz. Ἄγρα and Ἄγραι: Eustathius ad Il. B. 852. 362. 32: Pausanias, i. xix. 7: Plutarch, De Herod. Malign. xxvi.

χος θύει μὲν Ἀρτέμιδι ἀγροτέρᾳ καὶ τῷ Ἐνυαλίῳ, διατίθησί τε τὸν ἐπιτάφιον ἀγῶνα τῶν ἐν πολέμῳ ἀποθανόντων, καὶ τοῖς περὶ Ἁρμόδιον ἐναγίζει: and this might always have been his duty; or it might first have become so in consequence of this battle, and of the vow made before it. In either case it will be equally implied that the Polemarch was the person who was bound *ex officio* to make the vow on this occasion, or the person *de facto* who made it.

If now we ask why such a vow should have been made to Artemis in particular, and on the day of the battle of Marathon in particular; no answer to that question can be returned so probable as the date of the day. The 7th of the month was sacred to Apollo, the 6th to Artemis: and if the battle was going to take place on the 6th, it was going to take place on her day. This is probably the true reason why the vow was made to her, and not to any other of the gods or goddesses of the time: and that explanation of its origin is further confirmed by the fact, that though the vow was made on the 6th of Boëdromion, and the victory was won on the 6th of Boëdromion, the stated sacrifice in fulfilment of the vow was purposely reserved for the 6th of Thargelion—a day sacred to Artemis, not only as the 6th of the month in general, but as her birthday in particular. Ὅτι δὲ οὐ μόνον ἑκατόμβαι ἀλλὰ καὶ χιλιόμβαι ἦσαν παρὰ τοῖς παλαιοῖς . . . δηλοῖ ὁ γράψας ὅτι ἐν τῇ Μιλτιάδου νίκῃ χιλίας χιμαίρας Ἀθηναῖοι τῇ Ἀγροτέρᾳ Ἀρτέμιδι ἔθυσαν· ἧς καὶ ὁ κωμικὸς θυσίας μέμνηται[7]. καὶ ἔθυον δέ φασι κατὰ ἕκτην Θαργηλιῶνος μηνός· καθ' ὃν δὴ μῆνα πολλὰ τοῖς Ἀθηναίοις ἐγένοντο ἀγαθά[8]—in which last observation, Eustathius had his eye on Ælian[9], where the ἀγαθὰ in question, supposed to have fallen out in this month and on this day, and this one of the victory at Marathon, among the rest, are enumerated: though in dating the battle of Marathon on the 6th of Thargelion Ælian was undoubtedly mistaken.

With regard then to the inconsistency between the fact of this vow and its subsequent fulfilment, and Herodotus' statement of the numbers which fell in the battle; in our opinion it is more apparent than real—if Herodotus may be understood of the numbers which fell in the action and on the field of battle, and the numbers, as implied in the vow, of the sum total of all who perished any where and in any manner, on the same occasion. The numbers of the invading army are differently represented, at 600,000, 500,000, 400,000, 300,000, 210,000[10]: and the numbers who perished are differently represented also, and by some of our authorities even at 200,000[11]. We have seen that from the total amount of kids already sacrificed, between B. C. 490 and B. C. 401, they could not have been less than 50,000: and in our opinion the most correct statement concerning

7 Ad Equites, 657.

8 Eustathius ad Od. Γ. 8. 1454. 27.

9 Varr. ii. 25.

10 Plato, Opp. ii. iii. 388. 8. Menexenus: Lysias, ii. Ἐπιτάφιος, § 21: Scholia ad Nubes, 982: ad Equites, 778: Scholia ad Persas, 552. cf. ad 672: Pausanias, iv. xxv. 2: Val. Max. v. iii. 3. De Ingratitudine Externa: Cornelius Nepos, Miltiades, iv. 1: Justin, ii. 9. § 9: Scholia in Aristidem, xiii 126. 14—127. 20. Panathenaicus: Suidas, Ἱππίας: Aristides, xlvi. 234. 9. Ὑπὲρ τῶν τεττ. 46 ἔθνη.

11 Justin, loc. cit.

ii. That the date of the battle was the full of the moon. It is not distinctly asserted by Herodotus that the battle was fought on the day of the full moon; but that such was his belief, and such is the conclusion inferrible from the context of his account, appears from Plutarch's observations upon it[x]. *Καὶ μὴν τὴν πανσέληνον ἤδη σαφῶς ἐξελήλεγκται Λακεδαιμονίων καταψευδόμενος, ἥν φησι περιμένοντας αὐτοὺς εἰς Μαραθῶνα μὴ βοηθῆσαι τοῖς Ἀθηναίοις· οὐ γὰρ μόνον ἄλλας μυρίας ἐξόδους καὶ*

them which has come down is the contemporary one of the Epigram, quoted by Aristides[12]—

> *Ἑλλήνων προμαχοῦντες Ἀθηναῖοι Μαραθῶνι*
> *ἔκτειναν Μήδων ἐννέα μυριάδας*—

Yet even this much exceeds the statement of Herodotus. How then are both to be reconciled? In our opinion by taking into account the circumstances of the locality where the battle was fought—not merely the field of Marathon, but the vicinity. Marathon is described as a marshy or boggy ground[13]: *Μαραθὼν τόπος τῆς Ἀττικῆς, ἀπέχων τῶν Ἀθηνῶν σταδίους τριακοσίους, τῇ φύσει τραχὺς, δυσίππαστος, ἔχων ἐν ἑαυτῷ πηλοὺς τενάγη λίμνας*[14] —*Ἕλος ἦν μικρὸν ἐν τῷ Μαραθῶνι παρακείμενον· ἐκ δὲ τοῦ ἑτέρου μέρους ἡ θάλαττα, ὡς εἶναι στενὸν μέσον χωρίζον τῆς μάχης τὸν Μαραθῶνα*[15].

It seems then that between the field of battle at Marathon and the ships of the Persians, (to which they would naturally endeavour to escape after their defeat,) there was an isthmus, or neck of land, with a lake or bog on one side and the sea on the other. Pausanias tells us the great slaughter of the enemy took place between this lake and the sea[16]: *Ἐς ταύτην* (sc. *τὴν λίμνην*) *ἀπειρίᾳ τῶν ὁδῶν φεύγοντες ἐσπίπτουσιν οἱ βάρβαροι, καί σφισι τὸν φόνον τὸν πολὺν ἐπὶ τούτῳ συμβῆναι λέγουσι.* Now the battle as such took place in a different locality—where the Persians resisted bravely, and where the success of the day for some time was doubtful. We may easily conceive that not more than 6,400 might fall in the hand to hand conflict, and yet an infinite multitude in the flight and the pursuit. Herodotus' statement being understood of the former, and that of the Epigram of the latter, or of both, they are consistent one with the other.

The dead bodies of the Persians were burnt all together after the battle[17]. Those of their own countrymen were buried by the Athenians at Marathon too[18].

[x] De Herodoti Malignitate, xxvi.

[12] xlix. 511. 22 cf. Zosimus, i. p. 3.

[13] Scholia ad Aves, 245: 250: Ranas, 1331.

[14] Schol. in Platon. ii. 391—Menexenus, 388. 26.

[15] Schol. in Aristid. xiii. 134. 12. Panathenaicus. The scholiast on Pindar, Ol. xiii. 56. tells us the Hellotias Athena at Corinth took her name from this ἕλος at Marathon: cf. Suidas, Μαραθών· *τόπος Ἀθήνησιν . . . τοῦτον Καλλίμαχος ἐννότιον λέγει, τουτέστι ἔνυγρον.*

[16] i. xxxii. 6.

[17] Pausanias, i. xxxii. 3. 4. cf. ix. xxxii. 6.

[18] Thucyd. ii. 34: Pausanias, i. xxix. 4: xxxii. 3: Aristides, xlvi. Ὑπὲρ τῶν τεττ. 233. 1 sqq.

μάχας πεποίηνται μηνὸς ἱσταμένου, μὴ περιμείναντες τὴν πανσέληνον, ἀλλὰ καὶ ταύτης τῆς μάχης, ἕκτῃ Βοηδρομιῶνος ἱσταμένου γενομένης, ὀλίγον ἀπελείφθησαν, ὥστε καὶ θεάσασθαι τοὺς νεκροὺς ἐπελθόντας εἰς τὸν τόπον.

These observations are properly applicable to the answer which Herodotus supposes the Lacedæmonians to have returned to the Athenians, through their messenger, Philippides [y]: Τοῖσι δὲ ἕαδε μὲν βοηθέειν Ἀθηναίοισι, ἀδύνατα δέ σφι ἦν τὸ παραυτίκα ποιέειν ταῦτα, οὐ βουλομένοισι λύειν τὸν νόμον· ἦν γὰρ ἱσταμένου τοῦ μηνὸς εἰνάτη· εἰνάτῃ δὲ οὐκ ἐξελεύσεσθαι ἔφασαν μὴ οὐ πλήρεος ἐόντος τοῦ κύκλου—after which he adds, οὗτοι μέν νυν τὴν πανσέληνον ἔμενον.

It is clear then that in the apprehension of Herodotus the Lacedæmonians would not set out to the assistance of the Athenians before the full of the moon; but after that they would. Accordingly he tells us, as soon as the full moon was arrived and over, they did so [z]. Λακεδαιμόνιοι δὲ ἧκον ἐς τὰς Ἀθήνας δισχίλιοι μετὰ τὴν πανσέληνον, ἔχοντες σπουδὴν πολλὴν καταλαβεῖν οὕτω ὥστε τριταῖοι ἐκ Σπάρτης ἐγένοντο ἐν τῇ Ἀττικῇ. ὕστεροι δὲ ἀπικόμενοι τῆς συμβολῆς, ἱμείροντο ὅμως θεήσασθαι τοὺς Μήδους· ἐλθόντες δὲ ἐς τὸν Μαραθῶνα, ἐθεήσαντο· μετὰ δὲ αἰνέσαντες Ἀθηναίους καὶ τὸ ἔργον αὐτέων ἀπαλλάσσοντο ὀπίσω. And this is that part of his statements to which Plutarch referred in his concluding remarks: and from which he drew his inference that in talking about the full of the moon, and of the repugnance of the Lacedæmonians to take the field on any military expedition before its arrival, Herodotus had misrepresented the truth of the case.

For if they arrived so soon after the battle as to have found the dead bodies of the enemy still unburied, and the battle was fought on the sixth of the month, how was it possible that they could have arrived after the full moon? Such was Plutarch's reasoning, or that of the author of this oration, De Herodoti Malignitate, ascribed to him; and for this reason, he charges him with confounding the heavens, and transposing the full of the moon from the middle to the beginning of the month, in order to make good his accusation against the Lacedæmonians: Σὺ δὲ μεταφέρεις τὴν πανσέληνον εἰς ἀρχὴν μηνὸς, διχομηνίας οὖσαν, καὶ τὸν οὐρανὸν ὁμοῦ καὶ τὰς ἡμέρας καὶ

[y] vi. 106. cf. Plut. loc. citato. [z] Ib. 120.

πάντα πράγματα συνταράσσεις[a]: a charge which, when the real circumstances of the case come to be ascertained, is the most unfortunate for his purpose which he could have brought against Herodotus; this very absurdity, of dating the full of the moon on or about the sixth of the month, being the strongest and most striking confirmation of the truth of the account itself. That such however was the inference necessarily to be drawn from that account, viz. that the date of the battle in the apprehension and belief of Herodotus must have coincided with the full of the moon, may fairly be concluded even from Plutarch's observations upon it.

We may proceed to confirm this conclusion by the date of the arrival of the Spartans, and the length of time for which they were on the road. Herodotus tells us they set out *after* the *full moon*; and having once set out, marched so fast as to be already in Attica on the *third* day. Now this implies that they marched *night* and *day*, as they both might do, and if the necessity of the case required it would do, (if they set out immediately after the full moon.) And here the testimony of Isocrates should be compared with that of Herodotus[b]. Τοὺς *μὲν γὰρ ἡμετέρους προγόνους φασὶ τῆς αὐτῆς ἡμέρας πυθέσθαι τε τὴν ἀπόβασιν τὴν τῶν βαρβάρων, καὶ βοηθήσαντας ἐπὶ τοὺς ὅρους τῆς χώρας καὶ μάχῃ νικήσαντας, τρόπαιον στῆσαι τῶν πολεμίων· τοὺς δ'* (i.e. the Lacedæmonians) *ἐν τρισὶν ἡμέραις καὶ τοσαύταις νυξὶ διακόσια καὶ χίλια στάδια διελθεῖν στρατοπέδῳ πορευομένους.*

The distance from Sparta to Athens is thus stated at 1200 Olympic stades, or 120 British miles; and this distance must have been so well ascertained in the time of Isocrates, both by actual measurement and by constant intercourse between the two cities, that the statement may be implicitly relied upon[c]. To accomplish such a distance in three days and

a De Herodoti Malignitate, xxvi.

b Oratio, iv. Πανηγυρικὸς, § 97.

c Anecdota Græca, Oxon. iv. 154 Excerpta Rhetorica, the same three days' march is reckoned at ͵αφʹ stades, i. e. 1500: which is no doubt an exaggeration. There is in Herodotus, a reference to another well known case of the distance by road from a certain spot in Athens to a certain spot in the Peloponnese, which may be compared with this statement of Isocrates: ii. 7. Ἔστι δὲ ὁδὸς ἐς τὴν Ἡλιούπολιν ἀπὸ θαλάσσης ἀνὼ ἰόντι παραπλησίη τὸ μῆκος τῇ ἐξ Ἀθηνέων ὁδῷ, τῇ ἀπὸ τῶν δώδεκα θεῶν τοῦ βωμοῦ φερούσῃ ἔς τε Πίσαν καὶ ἐπὶ τὸν νηὸν τοῦ Διὸς τοῦ Ὀλυμπίου. The difference between these two roads was just 15 stadia, the former being 1500, the latter just 15 less. The statement in the Anecdota seems to have been grounded on this of Herodotus.

three nights would require a march of 200 stades (20 of our miles) in 12 hours, and of 100 stades, 10 English miles, in 24: a rate of marching which, but for the special circumstances of the case, the urgency of the occasion, the shortness of the time for which it had to be kept up, and the full of the moon, affording the same facility for marching by night as ordinarily by day, and the season of the year (the most favourable for an expedition of this kind which could have fallen out), would almost exceed the bounds of possibility. The fact of such a march in this instance, notwithstanding, must be admitted in deference not only to the express testimony of Herodotus and Isocrates, but to the common belief of Grecian antiquity: though as Aristides the Sophist observes, it would be more characteristic of an army of ἡμεροδρόμοι than of one of soldiers[d]: Εἰς Μαραθῶνα δ' οὕτως ἠπείχθημεν ὥστ' ἀνθ' ἡμεροδρόμων ἐγενόμεθα.

Yet to render the fact, under any circumstances, credible, it is absolutely necessary to suppose it made by night as much as by day; and therefore that the statement of Isocrates, that the Spartans were *three days* and *three nights* on the road, 72 hours in all, should be literally understood. Combining this with Herodotus', that they set out *after the full moon*, we draw from both the inference that they set out on the night of the full moon; and having marched without intermission two nights and two days and one more night, on the morning of the *third* day, as Herodotus himself tells us, they had already got into the Attic territory: which being understood of the Campus Thriasius, (the nearest part of that territory to the Isthmus,) 16 or 17 miles from Athens, if they were there by the *morning* of the *third* day they might be at Athens before the *evening* of the same: so that the statement of Isocrates, that in *three days* and *three nights* they had marched the whole of the distance from Sparta to Athens, would be strictly true.

The question then is next, How long after the battle they arrived? And to this Herodotus supplies no answer, further than that they came too late to take any part in the action, but not too late to see the dead bodies of the Medes and Persians, still lying on the field[e]: i.e. not yet disposed of.

[d] Oratio, xxxii. ὑπὲρ τῆς εἰρήνης B. 607. 25. [e] Vide supra, note, p. 344.

One thing however is clear from this account, viz. that if they set out before the full moon, they could not have arrived in less than three days after the full: and if the battle itself was fought on the day of the full moon, they must have arrived on the third day after the battle. Now we meet with a statement in Plato, once in the Menexenus[f], and again in the De Legibus[g], (repeated by Aristides the Sophist in his Panathenaicus[h]) that the Lacedæmonians who came on this occasion arrived the *day after the battle.* This was impossible, unless the battle was fought two days after the full, or, if the battle was fought on the full, unless they had set out on the day *before* the full. The best explanation of this statement of Plato's, in our opinion, is to suppose that as the battle was fought in the morning of the day of the full, and the Lacedæmonians set out in the evening—he has simply mistaken the date of their setting out, relatively to the day of the battle, for the day of their arrival*. Evening on the day of the full, according to the Greek rule of the noctidiurnal cycle, would be considered to belong to the *ὑστεραία*, or next day.

* There is a statement in Justin and in Orosius also which is probably to be explained on a somewhat similar principle. The former observes (ii. 9.): Igitur Athenienses, audito Darii adventu, auxilium a Lacedæmoniis socia tum civitate petierunt. quos ubi viderunt quatridui teneri religione non exspectato auxilio . . . . in campos Marathonios in prœlium egrediuntur. The latter (ii. 8. 107.): Porro autem Athenienses ubi adventare Darium compererunt, quamvis auxilium a Lacedæmoniis poposcissent, tamen cum detineri quatriduanæ religionis otio compertum haberent, &c. This quatriduum was made up of the day of the full moon, before which the Lacedæmonians could not have set out, and the three days after it, taken up by the march. We do not see at least how it can be otherwise explained. To understand it of the interval between the application of the Athenians on the 9th of the moon or the month, as Herodotus represents it, and the full of the moon, which could not be dated before the 15th, would suppose a *religio* of six days, not of four.

[f] Opp. Pars ii. iii. 389. 4. *Οὗτοι δὲ τῇ ὑστεραίᾳ τῆς μάχης ἀφίκοντο.*

[g] Pars iii. ii. 322. 14: De Legibus, III. *Οὗτοι δὲ, ὑπό τε τοῦ πρὸς Μεσσήνην ὄντος τότε πολέμου, καὶ εἰ δή τι διεκώλυεν ἄλλο αὐτοὺς, οὐ γὰρ ἴσμεν λεγόμενον, ὕστεροι δ' οὖν ἀφίκοντο τῆς ἐν Μαραθῶνι μάχης γενομένης μιᾷ ἡμέρᾳ.* The Scholiast shews that this "other impediment," of which Plato affected to be ignorant, was the scruple about the full moon: Schol. ii. 392. in Menex. 389. 4.

[h] xiii. 228. 2 lines from bottom. cf. xlvi. *ὑπὲρ τῶν δ'.* ad 226. 5. *Λακεδαιμόνιοι δὲ εἴθ' ὑπὸ τοῦ πρὸς Μεσσηνίους πολέμου, εἴτε καὶ τὴν πανσέληνον μένοντες, οὐδὲ αὐτοὶ βοηθεῖν εἶχον.* Cf. the Schol. 554. 13. 559. 21.

SECTION II.—*On the Lunar character of Boëdromion* 6, *in the year of Marathon.*

The date of the battle of Marathon in the civil calendar of the time being and the full of the moon having thus been coincident; it remains only to shew that by our own Attic calendar both the 6th of Boëdromion and the full of the moon actually fell out together.

It may be assumed that the true year of Marathon, in the Vulgar Æra, was B. C. 490—though a question has been raised on that point. This year in the decursus of the octaëteris of Solon corresponded to Cycle xiii. 7: and the calendar for that year stood as follows:

Attic Calendar, Cycle xiii. 7. *January* 12, *B.C.* 490.

Month.	Days.	Midn.		Month.	Days.	Midn.	
i. Gamelion	29	January	12	vii. Hecatombæon	29	July	8
ii. Anthesterion	30	February	10	viii. Metageitnion	30	August	6
iii. Elaphebolion	29	March	12	ix. Boëdromion	29	Sept.	5
iv. Munychion	30	April	10	x. Pyanepsion	30	October	4
v. Thargelion	29	May	10	xi. Mæmacterion	29	Novemb.	3
vi. Skirrhophorion	30	June	8	xii. Posideon	30	Decemb.	2

The first of Boëdromion then this year fell on September 5: and the second being perpetually exemtile, the sixth fell on September 9. The full moon of September, B. C. 490, is found by calculation to have fallen September 9 about 6.53·34 m. t. from midn. for the meridian of the ancient Sparta*. There was a lunar eclipse at the next full moon, Oct. 8, 4.30 p.m. for the meridian of Paris—Pyanepsion 5 in the Attic calendar of the same year and month. There can be no doubt therefore that the actual full moon of September, B. C. 490, fell on the 6th of Boëdromion, Cycle xiii. 7. of the Octaëteric correction of Solon Nor can we desire a more complete proof of the Proposition, which we have had it in view to establish; viz. that the 6th of Boëdromion, the tra-

* B. C. 490.		h.	m.	s.	
Mean full moon	Sept. 9	8	10	12	m. t. Greenwich.
	Sept. 9	9	39	55	m. t. Sparta.
True full moon	Sept. 9	5	23	51	m. t. Greenwich.
	Sept. 9	6	53	34	m. t. Sparta.

ditionary date of the battle of Marathon, taken directly from the calendar of the time being, and the 6th of Boëdromion Cycle xiii. 7. of the Attic correction of Solon, were absolutely one and the same; and both with September 9, B.C. 490—the true Julian date of the full moon in that year and that month. The battle was certainly fought early in the day; for there was time even after it to march from the temenus of Hercules on the field of Marathon to the temenus of Hercules in the Kunosarges, one of the suburbs of Athens, before evening the same day[i]. Its actual date then and that of the full moon must have been as nearly as possible coincident. On the evening of the same day (i.e. at sunset, September 9), the evening of Boëdromion 7 by the Attic reckoning, the Lacedaemonian detachment must have set out from Sparta; and before evening on the third day after, Boëdromion 9, September 12, they must have arrived at Athens.

Section III.—*On the Πρυτανεύουσα φυλὴ at the time of the Battle of Marathon; and on the order of the Tribes in the battle-array.*

Some other circumstances, historically connected with the battle of Marathon, and calculated to confirm and illustrate the above conclusions, have also been left on record. One of these is the name and order of the Tribe, which was serving the office of Prytany for the time.

Plutarch, in answer to the question *Διὰ τί τῆς Αἰαντίδος φυλῆς Ἀθήνησιν οὐδέποτε τὸν χορὸν ἔκριναν ὕστερον*[k]—among other reasons assigned in explanation of the fact mentions the following—

Καὶ γὰρ ὁ Μαραθὼν εἰς μέσον εἵλκετο, δῆμος ὢν ἐκείνης τῆς φυλῆς[l] . . . *Γλαυκίας δὲ ὁ ῥήτωρ καὶ τὸ δεξιὸν κέρας Αἰαντίδαις τῆς ἐν Μαραθῶνι παρατάξεως ἀποδοθῆναι ταῖς Αἰσχύλου εἰς τὴν μεθορίαν ἐλεγείαις ἐπιστοῦτο, ἠγωνισμένου τὴν μάχην ἐκείνην ἐπιφανῶς. ἔτι δὲ καὶ Καλλίμαχον ἐδείκνυε τὸν Πολέμαρχον ἐξ ἐκείνης ὄντα τῆς φυλῆς, ὃς αὐτόν τε παρέσχεν ἄριστον ἄνδρα καὶ τῆς μάχης μετά γε Μιλτιάδην αἰτιώτατος κατέστη, σύμψηφος ἐκείνῳ γενόμενος. ἐγὼ δὲ τῷ Γλαυκίᾳ προσετίθην ὅτι καὶ τὸ ψήφισμα καθ' ὃ τοὺς Ἀθηναίους ἐξήγαγε τῆς Αἰαντίδος φυλῆς πρυτανευούσης γραφείη κ', τ. λ.*

[i] Herodotus, vi. 116.
[k] Symposiaca, i. Problema, x. 3.

[l] Cf. Phot. Lexicon. Μαραθών· δῆμος Αἰαντίδος. cf. in Οἰνόη.

The right wing on the field of battle, it is well known, among the ancient Greeks, was the post of honour. The other reasons why this distinction was assigned to Æantis, that Marathon itself was a Deme of that Tribe—that Callimachus the Polemarch belonged to that Tribe—these reasons would no doubt have their weight; but probably even these would not have been sufficient but for the coincidence mentioned last of all, that Æantis was the *πρυτανεύουσα φυλὴ*—and therefore entitled in its own right to take precedence of the rest of the tribes, on any public occasion like this.

And herein we may observe a remarkable coincidence. The length of the Prytanies in the calendar of Solon, as we have seen [m], was invariable; the order only was variable; being every year determined by lot. There is no objection then *a priori* to the supposition that the actual order of Æantis in the year of Marathon, might have been the *seventh*. That being assumed however, then the seventh Prytany, as the scheme will shew [n], would enter on the 5th of Metageitnion, and go out on the 12th of Boëdromion: and the battle having been fought on the 6th, with reason might the same tribe which was entitled to precedence in the senate, and in the assembly, lay claim to it on the field of battle: and that by hypothesis would be Æantis, as it appears *de facto* to have been. Herodotus adds [o]: *Τοῦ μὲν δεξιοῦ κέρεος ἡγέετο ὁ πολέμαρχος Καλλίμαχος· ὁ γὰρ νόμος τότε εἶχε οὕτω τοῖσι Ἀθηναίοισι τὸν πολέμαρχον ἔχειν τὸ κέρας τὸ δεξιόν. ἡγεομένου δὲ τούτου ἐξεδέχοντο ὡς ἀριθμέοντο αἱ φυλαὶ, ἐχόμεναι ἀλλη-λέων*: in which statements there is nothing inconsistent with our conclusions. These words, *ὡς ἀριθμέοντο*, may be understood either of the order of the Tribes in the sense of the order of the Prytanies, (as determined previously in the usual manner for that year,) or if any one thinks better, of the order of rank and precedence, distinct from the order of the Prytanies, of which we gave an account supra [p]. In this case, all that we have to suppose is, that an exception being made from the special reasons of the occasion in favour of Æantis, (which in this order would have ranked as the ninth,) whereby it was assigned to the centre—the rest

[m] Supra, page 83.
[n] Ibid.
[o] vi. 111.
[p] Page 85, note.

were ranged on the right and left of Æantis, according to this order; the first four or five on the right, the rest on the left.

Section IV.—*On the date of the* Ψήφισμα *or Decree, which preceded the march to Marathon.*

The stated days of assembly in the calendar of Solon [q], were three in every month, the eleventh, the twentieth, and the thirtieth. If then the decree, in execution of which the Athenians marched out of the city to the field of Marathon, was passed in a regular assembly, it must have been passed on one of these days; and yet, (as we have learnt from Plutarch,) while Æantis was serving the office of Prytany. Between the first day of the seventh Prytany, in the year of Marathon, Metageitnion 5, August 10, and the battle, Boëdromion 6, Sept. 9, there would be three regular days of assembly, the 11th Metageitnion, August 16, the 20th, August 25, and the 30th, September 4. The first and the second of these we may consider excluded; but the third may very possibly have been the date of the decree itself.

We are told that the mover of this celebrated decree was Miltiades. Thus Aristotle, quoting one of the orators of after times [r]; *Δεῖν ἐξιέναι τὸ Μιλτιάδου ψήφισμα.* To him it is assigned by Aristides also [s]. It was both proposed and passed soon after the Persians had arrived at Marathon. Ὁ *μὲν γὰρ Μιλτιάδης ὅτε ἐπῆλθον οἱ Πέρσαι ἔγραψεν ὥστε εὐθὺς ἀπαντῆσαι τοῖς πολεμίοις* [t]—Ἐπιόντων *γὰρ τῶν Περσῶν ἔγραψε μὴ περιμεῖναι τοὺς Ἕλληνας, ἀλλὰ καταλεῖψαι τὴν πόλιν τῷ θεῷ, πρεσβύτας δὲ καὶ γυναῖκας φυλάττειν τὰ τείχη, τὴν δὲ νεότητα πᾶσαν ἐπὶ Μαραθῶνα δραμεῖν* [v]. And that the march must speedily have followed on the decree, may be inferred from Cornelius Nepos [x], who supposes the army to have taken the field only after the battle was determined on; and the battle itself to have taken place the next day: a supposition which has apparently the countenance of Plutarch: *Μιλτιάδης μὲν*

[q] Supra, page 48.

[r] Rhetorica, iii. 10. 129. 26.

[s] Oratio xlvi. Ὑπὲρ *τῶν τεττάρων,* 219. 1–12.

[t] Scholia in Demosthen. De Falsa Leg. 438. 16. (e Cod. Aug. *Reiske*): cf. Ulpian, Ibid. 155. 355. 7.

[v] Schol. in Aristid. Ὑπὲρ *τῶν τεττ.* 542. 15. ad 163. 19.

[x] Miltiades, v. 1–3. cf. cap. ii. Suidas, Ἱππίας.

γὰρ αὐτὸς ἐς Μαραθῶνα τῇ ὑστεραίᾳ τὴν μάχην συνάψας ἧκεν εἰς ἄστυ μετὰ τῆς στρατιᾶς νενικηκώς[y]. This *ὑστεραία* can be understood only of the day after the arrival at Marathon; particularly as Plutarch was well aware that he did not return to the city the day after the battle, but the day of the battle[z].

Herodotus has not told us of any decree, much less of the day on which it was passed; nor when the army arrived at Marathon, or how long before the battle. He too however gives us reason to infer that as soon as it was known that the Persians, under the guidance of Hippias[a], were arrived at Marathon, Miltiades and the other strategi lost no time in marching to encounter them[b]. And when they were now there, they were joined by the Platæans[b]. At this point of time, he first mentions the difference of opinion among the commanders on the question of giving battle; until it was decided by the casting vote of the Polemarch Callimachus[c].

After this decision he subjoins; *Μετὰ δὲ οἱ στρατηγοὶ τῶν ἡ γνώμη ἐφέρετο συμβάλλειν, ὡς ἑκάστου αὐτέων ἐγίνετο πρυτανηΐη τῆς ἡμέρης, Μιλτιάδῃ παρεδίδοσαν· ὁ δὲ δεκόμενος οὔτι κω συμβολὴν ἐποιέετο πρίν γε δὴ αὐτοῦ πρυτανηΐη ἐγένετο*[d]: which in our opinion requires some explanation. The scholiast on Aristides repeats this statement, but supplies no additional circumstances, which might have been useful for its explanation. *Ἰστέον δὲ ὅτι δέκα ὄντες οἱ στρατηγοὶ, καθ' ἑκάστην ἡμέραν εἷς ἕκαστος ἐστρατήγει· ἔλαχε γοῦν ὅτε ἡ τροπὴ τῶν βαρβάρων ἐγένετο Μιλτιάδης στρατηγῶν*[e]—*Ἐδόκει δὲ τοῖς μὲν τῶν στρατηγῶν μὴ συμβάλλειν τοῖς δὲ μάχεσθαι, ἐν οἷς ἦν καὶ Μιλτιάδης· ὡς δὲ προέλαβε τὸν πολέμαρχον ἐνίκα τῇ γνώμῃ. παρεδίδοσαν μὲν γὰρ αὐτῷ τὴν ἐξουσίαν οἱ πρὸ αὐτοῦ πρυτανευόμενοι στρατηγοὶ καθέκαστον, αὐτὸς δὲ οὐ συνέβαλλεν ἕως ἐπ' αὐτὸν ἧκεν ἡ πρυτανεία τῆς ἡμέρας. καὶ τότε συμβαλὼν ἐνίκησεν ἐπὶ ἄρχοντος Φαινίππου Ἀθήνησιν, ἐφ' οὗ ἐψηφίσαντο Ἀθηναῖοι γραφῆναι τὴν Πεισιανακτείαν στοὰν, ἥτις ὕστερον ἐκλήθη Ποικίλη*[f].

The names of none of the strategi but Miltiades are mentioned by Herodotus. The scholiast on Aristides supplies

[y] De Glor. Athen. viii.
[z] Aristides, v.
[a] vi. 102. 103.
[b] vi. 103. 107, 108.
[c] vi. 109, 110.
[d] Cap. 110.
[e] Oratio xiii. Panathenaica, 127. 5. Cf. 131. 38—132. 4.
[f] Oratio xlvi. Ὑπὲρ τῶν τεττ. 531. 14.

the names of two, Polyzelus and Kynægirus [g], and Plutarch one more, that of Aristides; who was the first too, according to him [h], to resign his command to Miltiades. From the account of Herodotus however, such as it is, it appears to us necessary to infer that the five strategi, who had been opposed to the resolution of giving battle, from the moment that measure was decided upon, ceased to have any thing to do with the command of the army; and that the other four, who had been in favour of it, must each have succeeded to the command in his turn for one day, before Miltiades; and Miltiades in his turn for one day, last of all. And this last day, on which it was his own turn to command, having been the day of the battle, (consequently Boëdromion 6,) the turn of the fourth, who had preceded him, must have been Boëdromion 5, that of the third Boëdromion 4, that of the second Boëdromion 3, and (as there was no second of Boëdromion) that of the first (which, if Plutarch is right in his statement, must have been Aristides) Boëdromion 1.

On this principle the question about giving battle or not, it is to be presumed, was decided the day before, Metageitnion 30, September 4. And as they were all at Marathon when it was decided, it is strongly implied thereby that they had marched to Marathon from Athens that very day, and decided this question among themselves as soon as they were on the spot; whither the Persians had already preceded them. And this also will just as strongly imply that the decree, by virtue of which they had made this march, was passed the same day too; and its date, on that principle, will turn out to have been what we have conjectured, i. e. the 30th of the month just expiring; the 30th of Metageitnion—a stated day of assembly.

There is no difficulty in supposing an assembly held at Athens early enough to admit of the march of the army directly after to Marathon. The scholia on Plato represent the distance from Athens to Marathon at 300 stadia [i]; and so does the anonymous author in the Anecdota Græca Oxoniensia [k]. Pausanias tells us Marathon was at the same dis-

[g] Oratio xiii. Panathenaicus, 126. 18. Cf. Plut. De Glor. Ath. iii.

[h] Vita, v.

[i] ii. 391. Menexenus, 388. 26.

[k] Supra, 346. note c. apparently after the Schol. on Plato.

tance from Athens as from Carystus in Eubœa[l]. Cornelius Nepos makes it only about 10 Roman miles from Athens[m]. Modern travellers in Attica compute the distance from Athens to Marathon, by one route, (the shorter but more difficult,) at 22 miles; and by another and a longer, though an easier one, at 26[n]. Whatsoever the distance in reality, yet if, even after the toil and fatigue of the battle, the Athenians were able to march back again in probably little more than half a day[o], *a fortiori* it must have been possible for them to march thither at first in little more than half a day too.

Section V.—*On the date of the mission of Philippides to Sparta.*

The above conclusions may be confirmed in the last place by the account of the mission of Phidippides; or as Plutarch, Pausanias, Cornelius Nepos, Lucian, Clemens Alexandrinus, and Suidas call him, Philippides. It appears, he was despatched to Sparta from Athens while the strategi were still there[p]; and it also appears he arrived at Sparta and had his audience there on the day after he was sent[q]: which was nothing extraordinary, if, as Herodotus tells us, he was an ἡμεροδρόμος, καὶ τοῦτο μελετῶν[r]: for still more remarkable feats of speed than this of running over a distance of 120 miles in 36 hours are on record of this class of men anciently; some examples of which we may have occasion to produce hereafter *.

The day on which he had this audience (the day after he set out from Athens) is called by Herodotus ἱσταμένου τοῦ μηνὸς εἰνάτῃ: and that would properly denote the ninth of

* Mr. Grote, iv. 462, reckons the distance which he had to travel at 150 miles; and supposes it to have been travelled in 48 hours. The latter is excessive, and would have implied, in the Greek mode of reckoning such intervals, that he arrived at Sparta τριταῖος, not δευτεραῖος. He observes however, from Mr. Kinken, (Geographical Memoir of Persia, p. 44,) that the Persian Cassids or foot-messengers will still travel at the rate of sixty or seventy miles a day for several days in succession.

[l] i. xxxii. 3.
[m] Miltiades, iv.
[n] See Mr. Grote's History of Greece, iv. 468. note.
[o] Herod. vi. 116.
[p] vi. 103. 105. cf. Corn. Nepos, Miltiades, iv. 1.
[q] vi. 106. Cf. Plutarch, De Herodoti Malignitate, xxvi.
[r] vi. 105. Cf. Suidas, Ἱππίας, and Φιλιππίδης: Anecdota Græca Oxon. iv. 154. 12 sq.: Excerpta Rhetorica.

the *month*, and probably was intended to do so: but it must also have been intended to denote the ninth of the *moon*—a supposition easily explained by the fact of its being known and assumed that the date of this audience at Sparta was *six* days before the battle, and that of the battle was the full moon: and the full of the moon being supposed, almost as matter of course, to have been the *fifteenth* of the month, the date of the audience, six days before the *fifteenth*, on the same principle must have been the *ninth*.

Now that Phidippides actually had his audience at Sparta *six* days before the battle, may be proved as follows: As the Athenians had sent him on purpose on this errand, it is not probable that they would decide upon acting of and for themselves, before they had learnt the success of his mission. And it is clear, from various facts connected with it, still upon record*, that they must have waited for his return, and for the answer which he brought back with him. Now it would not take him more time to return than it had done to go. If then he was sent to Sparta on Metageitnion 28, September 2, and had arrived there and had his audience Metageitnion 29, September 3, he might have got back again by Metageitnion 30, September 4, in time too for an assembly to be held, and the decree of Miltiades to be passed, and the march out to Marathon to take place, on the same day: of which marching out, and the circumstances under which it took place, Aristides gives us some idea, in the following allusion to it[s]: Ἡ δὲ πόλις πομπὴν ἀγούσῃ προσεῴκει μᾶλλον ἢ πρὸς ἀγῶνα κοσμουμένῃ· ἱερά τε γὰρ πάντα ἀνέῳγε καὶ τὰ

* One of these is the supposed appearance to him of Pan, on Mount Parthenius, which, as Herodotus tells us, vi. 105, he reported to the Athenians on his return. Herodotus does not say whether this vision occurred on the way to Sparta, or on the road back; but Pausanias (i. xxviii. 4.) says it was on the return. Cf. also viii. liv. 5. So also the Scholia on Aristides, ὑπὲρ τῶν τεττ. 563. 16–25. 564. 3.) which assert the fact of another appearance to the Athenians themselves on the way to Marathon, and that of course after the return of Phidippides. This leads Clemens Alex. in his Protrepticon to observe that the Athenians knew nothing of Pan, before Philippides discovered him unto them, iii. 44. p. 38. l. 14. And in this observation he was nearer the truth than perhaps he himself was aware, as we hope to see hereafter.

[s] xiii. 200. 16–201. 12. Panathenaicus.

τῶν ἱερέων γένη συνῆγε, καὶ διεπρεσβεύετο πρὸς τοὺς θεοὺς τὸν ἀρχαῖον τρόπον, κ̓, τ. λ. On this principle every thing is consistent. The 29th Metageitnion was the *ninth* of the moon, the 30th was the *tenth*, the 6th of Boëdromion was the *fifteenth**.

It thus appears that Herodotus certainly considered the date of the battle to have been that of the full moon; and calculated the date of the mission of Phidippides and his arrival at Sparta accordingly. Whether he was aware of the date of the battle in the civil calendar, the sixth of the month, is another question. He might have been so, and yet have spoken of the day of the audience of Phidippides as the *ninth* of the month in the sense of the *ninth* of the moon. And on this question, it would be important to know when he was writing his account of these things—for if it was not much earlier than B. C. 444, the difference between the calendar lunar reckoning and the true in the octaëteric correction of Solon, and in any other which agreed with that (as the Spartan), had then been so much reduced by time, that the ninth of the month and the ninth of the moon might have been assumed as the same. We are persuaded however that he determined the date of the audience in question in the manner just pointed out—by reckoning six days back from the 15th of the moon, or month, allowing one day for the return of Phidippides to Athens, and five days after that to the battle. Add to this, his account of the junction of the Platæans, which, to judge from the context of his narrative[t],

* We may take our leave of this history of Phidippides with the mention of one more fact, which, though known only through the testimony of Lucian, is too interesting to be omitted: viz. that *he* was the man who carried the news of the victory from Marathon to Athens, and expired in the act of exclaiming, *Χαίρετε, Νικῶμεν.* Lucian, i. 727. Pro lapsu inter salutandum, 3. 58: *Πρῶτος δ' αὐτὸ (τὸ χαίρειν) Φιλιππίδης ὁ ἡμεροδρομήσας λέγεται ἀπὸ Μαραθῶνος ἀγγέλλων τὴν νίκην εἰπεῖν πρὸς τοὺς ἄρχοντας, καθημένους καὶ πεφροντικότας ὑπὲρ τοῦ τέλους τῆς μάχης, Χαίρετε, νικῶμεν· καὶ τοῦτο εἰπὼν συναποθανεῖν τῇ ἀγγελίᾳ καὶ τῷ χαίρειν συνεκπνεῦσαι.* Plutarch, indeed, records this fact of Thersippus, or Eucles, De Gloria Atheniensium, iii. *Τὴν τοίνυν ἐν Μαραθῶνι μάχην ἀπήγγειλεν, ὡς μὲν Ἡρακλείδης ὁ Ποντικὸς ἱστορεῖ, Θέρσιππος ὁ Ἐρωεύς· οἱ δὲ πλεῖστοι λέγουσιν Εὐκλέα δραμόντα σὺν τοῖς ὅπλοις . . . . τοσοῦτον μόνον εἰπεῖν, "Χαίρετε," καὶ "Χαίρομεν," εἶτα εὐθὺς ἐκπνεῦσαι.*

[t] vi. 107, 108.

must have happened on the day of the arrival at Marathon itself (Metageitnion 30), before the question about giving battle had yet been decided. Platæa was a day's march from Marathon. The Platæans might have heard of the mission of Phidippides, and even of its success, before they set out; and the very fact of its failure might have been the reason why they marched with so much alacrity to render the Athenians (now reduced to the necessity of depending on themselves) such aid as they could.

That Plutarch indeed, if he was really the author of the oration De Herodoti Malignitate, must have considered the calendar date of the battle inconsistent with the lunar, appears from the strong and unmeasured observations, quoted supra. And yet it is singular that he should not have thought of resolving the difference into its true cause, the lunar anticipation; of which he could scarcely have been ignorant: especially as in reference to the difference between the Bœotian date of the battle of Platæa and the Attic one, which was even greater than this of the 6th of the month and the 15th, he himself assigns a reason, which would have been just as applicable in this instance as in that. But the author of this oration was prejudiced against Herodotus' account, and determined beforehand to see nothing in it but obscurity and inconsistency. For this reason he ridiculed the idea of any reluctance of the Spartans at this time to take the field on a military expedition before the full of the moon; a thing which they had done a thousand times since. It does not follow that because this law had been dispensed with in the course of time, it was not still in existence at this particular epoch. We shall see proof hereafter that it was still in force, and still acted on, in the year of the battle of Platæa. We meet with allusions in Attic antiquity to a similar law at Athens; forbidding to march on an expedition before the seventh of the month[v]: though there is no instance on record (so far as we know) when it was acted upon. As to this particular rule, in the case of the Lacedæmonians, it is asserted by many of the ancients as well as by Herodotus: and by some of them so as to imply

[v] Cf. Hesychius, Suidas, Parœmiographi Græci, Zen. Cent. iii. 79. 297: Ἐντὸς ἑβδόμης.

that they did not obtain their knowledge of it from Herodotus, or from what passed between the Athenians and the Spartans before the battle of Marathon[x].

CHAPTER II.

On the date of the Battle of Salamis.

SECTION I.—*Traditionary date of the Battle, Boëdromion 20; and Lunar Character of that date.*

The traditionary date of the battle of Salamis, in terms of the Calendar of the time being, appears to have been always the same, Boëdromion 20. The day itself was remarkable for a certain coincidence, that of falling on one of the feriæ of the Eleusinian mysteries; which no doubt contributed to fix and perpetuate it. That a coincidence of this kind distinguished the day of the battle might be collected even from Herodotus[y]. Every later authority however attests and confirms the fact.

Whether the year of the expedition of Xerxes was B. C. 480 or B. C. 481, has been made the subject of controversy; but we shall no doubt be excused if we assume it to have been B. C. 480. This year in the decursus of the Octaëteric Correction of Solon, answered to cycle xv. 1; and the epoch, Gamelion 1, was falling at that time on January 19, as at first. The scheme of the Attic calendar, for the whole of this year, consequently stands as follows:—

[x] Vide the Scholia on the Acharnenses, 84. (cf. Suidas, πανσελήνῳ): Pausanias, i. xxviii. 4: Scholia in Platon. ii. 392: Menexenus, 389. 4: Scholia in Aristidem, xlvi. 554. 13: 559. 21: Suidas, Ἱππίας: Φιλιππίδης: Lucian, ii. 371: De Astrologia, 25: Strabo, ix. i. 244, 245: Anecdota Græca Oxon. iv. 154. 10 sqq.

[y] viii. 65.

Attic Calendar, Cycle xv. 1. *Gamelion* 1. *January* 19. *B. C.* 480.

Month.	Days.	Midn.	Month.	Days.	Midn.
i. Gamelion	29.. January	19	vii. Hecatombæon	29 .. July	15
ii. Anthesterion	30.. February	17	viii. Metageitnion	30 .. August	13
iii. Elaphebolion	29.. March	19	ix. Boëdromion	29 .. Sept.	12
iv. Munychion	30.. April	17	x. Pyanepsion	30 .. October	11
v. Thargelion	29.. May	17	xi. Mæmacterion	29 .. Novemb.	10
vi. Skirrhophorion	30.. June	15	xii. Posideon	30 .. Decemb.	9

The second of Boëdromion being perpetually exemtile, the 20th of that month was in reality the 19th; and the *first* being assumed September 12, the *nineteenth* would be September 30. This then must have been the date of Salamis according to our Attic calendar for the time being; Boëdromion 20, Cycle xv. 1, September 30, B. C. 480.

This being the case, in order to the confirmation of our calendar by the verification of this date, two things only would be necessary: i. From the historical circumstances before and after the battle, still upon record, to ascertain the exact relation of the traditionary date (the 20th of the ninth month, Boëdromion) to the true lunar date of the time being. ii. To shew that this must have been exactly the relation of a given calendar date to the corresponding lunar date, which would be holding good, by virtue of the lunar anticipation, in the decursus of civil or calendar, and natural or true, mean lunar time, in the octaëteric correction of Solon, at the ingress of Cycle xv., B. C. 480. For from both these facts laid together it would necessarily follow that Boëdromion 20, the historical and traditionary date of the battle, in terms of the calendar for the time being, and Boëdromion 20, in terms of our own scheme of the octaëteric correction of Solon, were absolutely one and the same; and consequently that our Attic calendar, Cycle xv. 1. and the actual calendar for the time being must have been the same too.

We hope however the classical reader will not consider it an uninteresting undertaking, if we propose to go beyond this; and by taking a more complete and particular review of the events of this memorable year, and fixing the intermediate dates between the setting out of the expedition and the battle of Salamis with all the precision which may be attainable, to confirm our calendar by circumstantial evidence for the whole of this year also. The first thing to be done for that purpose is to determine the date of the setting out; by which we understand the departure from Sardes, B. C. 480, not the departure from Susa, B. C. 481.

SECTION II.—*On the date of the departure of Xerxes from Sardes, B. C.* 480.

It is agreed that the winter, which preceded the march into Greece, was passed by Xerxes at Sardes; and that he set out *ἅμα τῷ ἔαρι* in the ensuing year: i. e. the spring of B. C. 480. And here Herodotus supplies a note of time, which, could it only be depended on, would fix the very day of the departure from Sardes: *Ὡς δὲ τά τε τῶν γεφυρέων κατεσκεύαστο...καὶ αὐτὴ ἡ διώρυξ παντελέως πεποιημένη ἀγγέλλετο, ἐνθαῦτα χειμερίσας ἅμα τῷ ἔαρι παρεσκευασμένος ὁ στρατὸς ἐκ τῶν Σαρδίων ὡρμᾶτο ἐλῶν ἐς Ἄβυδον. ὡρμημένῳ δέ οἱ ὁ ἥλιος ἐκλιπὼν τὴν ἐκ τοῦ οὐρανοῦ ἕδρην ἀφανὴς ἦν, οὔτ᾽ ἐπινεφέλων ἐόντων, αἰθρίης τε τὰ μάλιστα· ἀντὶ ἡμέρης τε νὺξ ἐγένετο* [z]. It is thus plainly asserted that just as the army was beginning its march, (before at least it had been long on the march,) and in any case on the day of the departure from Sardes itself, the sun was eclipsed.

Chronologers and astronomers are aware of the difficulty connected with this statement, *literally* understood, of the year in question, B. C. 480; the true year of the march into Greece. It may be explained in a few words. There was one solar eclipse this year, October 2, at 1 p. m. for the meridian of Paris, and another April 8 at 11.15 p.m. for the same meridian. The former was later than the battle of Salamis; the latter was invisible either at Sardes, or any where else in Europe or Asia. The difficulty therefore which arises from the literal construction and acceptation of this statement of Herodotus' is self-evident. It involves history and astronomy in irreconcilable contradiction.

There was however an eclipse of the sun in the year before this march, the year of the departure from Susa [a], B. C. 481; which calculation determines to April 19, not more than seven or eight hours from midnight for the meridian of

[z] vii. 37. cf. 38, 39. cf. also the Argumentum secundum of the Persæ of Æschylus.

[a] Herod. vii. 20. 26. cf. viii. 54.

Susa; which if Xerxes had been truly setting out from Sardes B.C. 481, and not B.C. 480, would have confirmed the statement of Herodotus by the testimony of astronomy; and if this eclipse was visible at Sardes also would have ascertained the day of the departure from Sardes as the day of that phenomenon. This departure was taking place in the spring; and this eclipse on April 19, B.C. 481, was only 22 days later than the mean vernal equinox that year, March 28, and only 24 later than the true, March 26. The Persian day began at sunrise [b]; and nothing could be more probable *a priori* than that the march of Xerxes on this occasion (like that of Darius Codomannus on a similar occasion of later date [b]) would purposely begin at sunrise: and this eclipse even for the meridian of Sardes must have happened more than an hour after sunrise, consequently more than an hour after the army was already on its march.

These are circumstances of agreement between the actual eclipse of April 19, B.C. 481, and the eclipse historically described by Herodotus, B.C. 480, which cannot be resolved into accident *. But if not, they identify them one with the other; and consequently lead to the inference that if he did not confound the year of the departure from Sardes with that of the departure from Susa, he must have mistaken the eclipse which preceded the latter for the same kind of phenomenon before the former. That Herodotus mistook the true year

* We have calculated the new moon of April, B.C. 481, for the meridian of Susa; and found as follows:

		h.	m.	s.	
Mean new moon	April 19	8	22	30	m.t. Greenwich.
	April 19	11	33	12	m.t. Susa.
True new moon	April 19	4	41	55	m.t. Greenwich.
	April 19	7	52	37	m.t. Susa.

The distance of the sun from the descending node, according to our calculation, was only 6° 0′ 50″—so that there must have been a great eclipse somewhere or other on this occasion. Sunrise being calculated for the latitude of Susa, the same year and day, is found to have happened, at 5h. 36m. 42s. app. time, 5h. 34m. 34s. m.t. inclusive of the effect of refraction: i.e. 2h. 18m. 3s. before the middle of the eclipse.

Professor Airey has a paper in the Philosophical Transactions, 1853, on the eclipse of Herodotus, of April 8, B.C. 480—to which we refer the reader.

[b] Cf. our Fasti Catholici, i. 206: also Herod. vii. 54. and 223.

of the march into Greece, is not credible, since he himself dates the arrival of Xerxes in Attica in the archonship of Calliades[c], and, what is a still more certain note of the truth, was aware that the year of the march coincided also with an Olympic year[d]; which could not *possibly* have been any but B. C. 480, Olymp. lxxv.

There is no alternative therefore except to suppose that he has mistaken the eclipse; and under the influence of that mistake transposed it from the year to which it belonged, and the occasion which it actually characterized, (the occasion of the setting out from Susa,) to the year next after, and to the similar occasion in that year, that of the departure from Sardes. And it may serve to account for the mistake, that the day of the departure was probably the same in each instance, both in the Persian calendar of the time being, and in the Julian; the 25th of Béhman-mah in the former, and the 19th of April in the latter*: and the Attic date of

* The day on which Xerxes was to set out from Susa on this momentous expedition, in the Persian calendar for the time being, would probably be very carefully chosen; especially as every day of the month in that calendar had its own presiding principle, called in the Persian language an Ized; and derived its name from his. Let us therefore enquire to what day of the month in the Persian calendar, April 19, B.C. 481, would correspond.

The second Cyclico-Julian Period of the correction of Gjemschid began to be current March 22, B. C. 582: and B. C. 482 was the 101st year of that period; in which year the recession amounting to 25 days complete the head of the calendar was falling on Feb. 25. The same was the case B. C. 481. The following consequently is the scheme of the calendar for that year.

Persian Calendar, B. C. 481.

Period ii. 102. Epoch Feb. 25, at sunrise.

Month.	Sunrise.	Month.	Sunrise.
i. Dey mah ..	.. Feb. 25	vii. Tîr mah ..	.. Aug. 23
ii. Béhman mah	.. March 26	viii. Murdâd mah	.. Sept. 22
iii. Esphendârmad mah	April 25	ix. Shahrivâr mah	.. Oct. 22
iv. Phervardîn mah	.. May 25	x. Mihir mah	.. Nov. 21
v. Ardibehisht mah	.. June 24	xi. Abân mah	.. Dec. 21
vi. Churdâd mah	.. July 24	xii. Adur mah ..	.. Jan. 20

Epagomenæ, Feb. 19.

April 19 then, reckoned from sunrise, corresponded to the 25th of

[c] viii. 51. [d] vii. 206: viii. 71, 72.

April 19, B. C. 480, (the traditionary date of the beginning of the march of Xerxes from Sardes to Greece,) in the calendar of the time being, being Munychion 3, Herodotus might be still writing, or only just finishing, his history, at a time when the 3rd of Munychion, B. C. 480, as the date of the lunar conjunction for the time being was liable to be confounded with the 3rd of Munychion, B. C. 481 *.

Béhman-mah. And here it may be remarked that, as Xerxes was going to set out on a long and distant journey, and on a military expedition, at the same time, it might have been supposed *a priori* that if there was any Ized who presided over wayfaring men, and over military undertakings also, he would select *his* day to set out upon. And there was one *such*, the name of which was Behrâm, and who gave name to the xxth of the month. But it should be observed, that though Xerxes was setting out on a military expedition, he expected to meet with no resistance. He anticipated an easy conquest; and it was of more importance to him to secure the maintenance of his army on the road, and the good will and attachment of his future subjects, than mere victory in the field. The Ized who presided over the 25th of the month, and was called Ird, ârd, or Arâd, appears to have had the charge of the arts and offices of peace, good order, religion, and the like; and in particular that of providing for the wants of all creatures animate and inanimate, out of the treasury of God, committed to his care. For this reason he might make choice of *his* day to set out upon, rather than of that of the Angel of War.

* It cannot indeed be denied that the testimony of contemporary history has sometimes been given to a solar or lunar eclipse, which calculation has not been able to verify. Such is the solar eclipse, said to have preceded the death of Augustus, U. C. 767 A. D. 14[1]. It has been conjectured, in explanation of such phenomena, (attested by history but not confirmed by astronomy,) that possibly the interposition of a comet between the earth and the sun might cause an extraordinary eclipse, as much as the moon an ordinary one. But a comet, to produce such an effect, must be invisible at least. Consequently, though a comet is said to have appeared in the year of the invasion of Greece by Xerxes[2], yet being a visible one, it could have produced no such effect as the eclipse alluded to by Herodotus: and besides, if one appeared at all that year, it was not when Xerxes was setting out, but when he was approaching Attica.

It is clear that, while we admit such extraordinary explanations of an historical and chronological difficulty to be possible *per se*, they are not to be resorted to, except when every other has been tried and failed. In the present instance, if Herodotus' account of what passed between Xerxes

1 Cf. Dio, lvi. 29: Zonaras, x. 38: Syncellus, 602. 12–16.
2 Lydus, De Mensibus, iv. § 73. 102. 8. Pliny, H. N. ii. 22.–273.

and the Persian Magi, in consequence of the eclipse, may be treated as historical, it is an obvious inference from it that this eclipse was not happening under any circumstances different from usual. It was an ordinary phenomenon of its kind, happening at the usual time, the conjunction of the sun and the moon. *Ἰδόντι δὲ καὶ μαθόντι τοῦτο τῷ Ξέρξῃ ἐπιμελὲς ἐγένετο· καὶ εἴρετο τοὺς μάγους τὸ θέλει προφαίνειν τὸ φάσμα. οἱ δὲ ἔφασαν ὡς Ἕλλησι προδεικνύει ὁ θεὸς ἔκλειψιν τῶν πολίων· λέγοντες ἥλιον εἶναι Ἑλλήνων προδέκτορα σελήνην δὲ σφέων. πυθόμενος δὲ ταῦτα ὁ Ξέρξης περιχαρὴς ἐὼν ἐποιέετο τὴν ἔλασιν.* Now this explanation recognises two agents as concerned in the phenomenon; one a passive, the sun, the other an active, the moon. Consequently it recognises an ordinary phenomenon of its kind, produced by the action of the moon on the sun in the ordinary way. And as to the explanation itself, in our opinion, it is to be understood to imply not that the sun was the tutelary genius of the Greeks, and the moon that of the Persians, (the contrary of which at this time was the real state of the case,) but simply that the moon and the sun being both concerned in this phenomenon, as the Greeks and the Persians were in the result of this expedition—the part sustained by the sun was significant beforehand of the part which the Greeks should sustain in that expedition, and *vice versa*, the part sustained by the moon was a prognostic of that which should be sustained by the Persians; that is, as the moon had just caused an *ἔκλειψις* or failing of the sun, so should the Persians cause an *ἔκλειψις* or failing of the cities of the Greeks.

There is no alternative therefore left, as we have observed, except to suppose that Herodotus has either asserted a matter of fact which never occurred under *any* circumstances, or if there was some foundation for what he has stated, it must have been in the eclipse the year before, April 19, B. C. 481. It remains then only to explain, if possible, by what means he might have come to confuse the eclipse of B. C. 481 with a similar phenomenon B. C. 480.

This explanation is probably to be found, first, in the fact that Xerxes set out on his march from Sardes on the same day B. C. 480 as on his march from Susa the year before; the 25th of the Persian Béhman-mah, the 19th of the Julian April; secondly, that the date of this day in the Greek calendar (i. e. the Attic) for the time being, in the second instance —(the date of the setting out from Sardes)—was the 3rd of Munychion: thirdly, that there was actually an eclipse of the sun, April 19, B. C. 481, which 50 or 60 years afterwards was easy to be confounded with April 19, and consequently Munychion 3, B. C. 480: fourthly, that though Herodotus might have written his history in general within 40 or 50 years after B. C. 481 or 480, he was still engaged upon it—he had not done revising and adding to it, for even fifteen or twenty years more.

Herodotus, according to Pamphile, quoted by A. Gellius[3], was 53 years old at the beginning of the Peloponnesian war, B. C. 431; consequently

[3] xv. 23; cf. 17. Also Suidas, Παμφίλη: Σωτηρίδας: Diog. Laert. passim. Photii Bibliotheca, Cod. 175. 119. 16.

born B. C. 484, and only 4 or 5 years old at the time of the invasion of Xerxes: so that he could have remembered nothing about it from his own observation at least. And though this statement of Pamphile's has been discredited, we know of no good reason why it should not be believed. In like manner, the ancients have left it on record that he recited his history first at the Olympic games, and again at the Panathenæa [4]; though that too has been called in question [5]: the former commonly assumed Ol. lxxxiii. 1. B. C. 448, or lxxxiv. 1. B. C. 444—the latter the Panathenæa, B. C. 446 or 442. It is agreed too that he was one of those who migrated to Thurii, when the Athenians resettled the ancient Sybaris, under that name, B. C. 443 or 442: and the epigram on him in the Greek anthology implies that having once settled at Thurii, he lived ever after, and died and was buried, there [6]. And it is certain that he must still have had his history in hand after he settled at Thurii. Pliny says it was written and published there, U. C. 310, B. C. 444 [7]. Aristotle quotes the opening sentence of it, Ἡροδότου Θουρίου ἥδ' ἱστορίης ἀπόδειξις [8]—which implies that it must have passed from the author at last under the style of Herodotus the Thurian, not the Halicarnassian. If so, not until after B. C. 442 at least. There is a reference in the History itself to the surprise of Platæa, B. C. 431 [9]—which would prove that he was still engaged upon it at the beginning of the Peloponnesian war; and there is another [10] which would prove the same fact of as late a date as B. C. 425, the seventh year of the war. And there are many other allusions in it, all later than the times of which it treats professedly, which were probably inserted afterwards; or at least may give us an idea how late the author himself must still have been living and writing [11].

It is not improbable therefore that he might still have it in hand B. C. 424—and might have inserted this episode relating to the eclipse in that very year. That year was exactly 57 years (three Metonic cycles) later than B. C. 481. Consequently if April 19 was the date of a lunar and solar conjunction B. C. 481—it must have been so B. C. 424. Moreover April 19 was the 3rd of Munychion by the Octaëteric calendar B. C. 480; and by the same calendar B. C. 424 also; and the date of the true new moon too that year, as April 19 was B. C. 481. And Munychion 3 being

4 Cf. Lucian, Opp. i. 832. Herodotus, sive Aëtion, i. 25: 834. 2. 4. 7: Plutarch, De Herodoti Malignitate, xxvi: Pliny, H. N. xii. 8: Eusebius, Chron. Arm. Lat. ii. 213. Ol. lxxxiii. 3: Thes. Tempor. Ol. lxxxiii. 4: Proverbia Græca, 135. e Cod. Coislin. 157. εἰς τὴν Ἡροδότου σκιάν.

5 Lewis' Roman History, i. 97: Mure, History of Greek Literature, iv. 254–270.

6 iv. 230. Ἀδέσποτα, dxxxiii. cf. Schol. ad Nubes, 331. ad Aves, 521: Diodorus Sic. xii. 7–10.

7 H. N. xii. 8. 540.

8 Rhetorica, iii. 9. 125. 29.

9 vii. 233.

10 ix. 73.

11 Cf. i. 130: (cf. Hellenica, i. 2. 19:) v. 77: vi. 98, 131: vii. 106. 136, 137. 151, 152: ix. 16. Of these the most important would be i. 130; the allusion to some revolt of the Medes in the reign of Darius (Nothus), if that was the occasion, noticed historically by Xenophon, Hellenica, i. cap. ii. § 19. B. C. 409–408, at which time, Herodotus, if born B. C. 484, must have been 76 years old.

This is the best explanation of the difficulty which we have to offer, without compromising the authority of Herodotus, or setting it at variance with astronomy; and it appears to us competent for this purpose: though whether the reader may think so, or not, yet that the true year of the march from Sardes must have been B. C. 480, will still be certain; and that the actual date of the beginning of the march was April 19, Munychion 3, the same year, if not absolutely certain, will be in the highest degree *probable;* as the course of subsequent events and their proper dates will shew.

Section III.—*On the distance from Sardes to Athens; and on the rate of the daily march of Xerxes.*

The date of the beginning of the march of Xerxes, B. C. 480, having been thus probably determined to April 19, Munychion 3, that year; the next thing to be considered is the distance from Sardes to Athens, and the probable rate of the march of Xerxes, on an average, every day.

Now the total distance from Sardes to Athens in right line measurements, along the course marked out by Herodotus, may be obtained from D'Anville's maps as follows:

the traditionary date of the departure from Sardes B. C. 480, and the date of the new moon B. C. 424, it is possible that the mistake which Herodotus must have made in transferring the eclipse of B. C. 481 to B. C. 480, might ultimately have been produced by confounding Munychion 3 B. C. 424 with the same term B. C. 480. Particularly if we take into account the possible source of error in reckoning back from any date later than B. C. 425 to any date before it by simply archontic years. There were 57 archons between B. C. 424 and B. C. 480 — though only 56 years; and each of these being reckoned equivalent to a year, Herodotus might go back almost without suspecting his error, from Munychion 3 B. C. 424 to Munychion 3 B. C. 481, instead of B. C. 480, and to the year of Calliades too, as he might suppose, (just as the author of the Parian Chronicle did under the same circumstances, Epoch 52,) and therefore the year of the invasion of Xerxes. If he really had his history still in hand, as late as B.C. 408—when he was so old a man, and his memory so likely to have begun to fail; nothing would be more possible than such a mistake as this.

Distances from Sardes to Athens, in Roman miles, and in a straight line.

	Roman miles.
From *Sardes* to *Abydus*	160
— *Sestus* to the Head of the *Sinus Melanes*	36
— The *Sinus Melanes* to *Amphipolis*, or the *Novemviæ* ..	155
— The *Novemviæ* to *Acanthus*	45
— *Acanthus* to *Therma*	67
— *Therma* to the river *Axius*	18
— The river *Axius* to the Head of the *Sinus Thermaïcus*	12
— The Head of the *Sinus Thermaïcus* to *Thermopylæ* ..	127
— *Thermopylæ* to the borders of *Attica*	74
— The borders of *Attica* to *Athens*	19
From *Sardes* to *Athens*	713

Both D'Anville and major Rennell assume, as the result of a careful comparison of actual measurements of both kinds, that road-distances may be obtained with a competent degree of exactness from right-line distances by adding $\frac{1}{8}$th to the latter. But for our purpose at present the latter are all which is required.

The next question then is that of the probable rate of the march of an army like this of Xerxes, every day for which it was actually in motion. The *justum iter militare*, (the ordinary day's march,) in the Roman service, was 15 or 16 Roman miles, 12 or 13 British; and according to practical military men, like major Rennell, who have inquired into this point for the sake of chronological and geographical problems, the Roman standard, or the corresponding one in British miles, is the utmost of which human nature, at any time and in any quarter of the world, and especially for many days together, may be considered capable [e].

In the case however of an armament, composed as this of Xerxes is represented to have been, not only of fighting men, but of retainers and followers of every kind, besides women and children, and beasts of burden innumerable, as well as ships of war, and ships of burden, equally numerous—consisting in short of not less than 5,283,000 souls in all [f] *—

* The number of fighting men, in the army of Xerxes, on foot, was 1,700,000, (vii. 60: cf. 87. 89. 184–186, 187): that of horsemen, 80,000,

[e] Cf. our Fasti Catholici, i. 252. *n.*

[f] Herod. vii. 185, 186, 187.

even this standard would be a great deal in excess of the truth. The ordinary day's march of an army, encumbered like this, could scarcely be estimated at half the usual rate. We will assume it however at about *seven* Roman miles by actual road distance every day; i. e. according to the proportion laid down by D'Anville and major Rennell, at something more than *six* direct.

The general accuracy of this assumption may be inferred from Herodotus' own statement [g], that the march on the retreat, from Thessaly to the Hellespont, took up 45 days. If by Thessaly here he meant the nearest point in Thessaly to Attica, the straits of Thermopylæ; then along the same line as before the direct distance thence to the Hellespont must have been 460 Roman miles; along one which should dispense with the angle, made before by marching from the Strymon to Acanthus, and thereby save a distance of sixty miles and upwards, it would be only 400: which, for forty-five days' time, would be at the rate of *nine* miles a day direct, ten and a little more by road. By comparing viii. 115 with 51, and other passages which spoke of delays, of greater or of less duration, on the advance, and taking into account the distance from Thermopylæ to Athens, we may infer that the same distance was probably marched in these 45 days, which had taken up 60 before. Consequently that the rate of the march during the retreat was $\frac{1}{4}$ greater than during the advance. If the former then is to be assumed at *nine* Roman miles a day, the latter must be assumed at *six* $\frac{3}{4}$.

Xenophon, speaking of the return of Agesilaus from Asia, B. C. 394 [h], observes; Διαβὰς δὲ τὸν Ἑλλήσποντον ἐπορεύετο διὰ τῶν αὐτῶν ἐθνῶν ὧνπερ ὁ Πέρσης τῷ παμπληθεῖ στόλῳ· καὶ ἣν ἐνιαυσίαν ὁδὸν ὁ βάρβαρος ἐποιήσατο ταύτην μεῖον ἢ ἐν μηνὶ

(vii. 87): that of Triremes was 1207, (89: that of the crews, 517,610: the sum total of all together, 2,317,610: cf. 184): and of persons of every description, besides women, and eunuchs, and children, 5,283,210: cf. 186, 187: also Isocrates, xii. Panathenaicus 242. d. e. = 327. 53: Dionys. Hal. xi. 1.

[g] viii. 115: cf. Cornelius Nepos, Themistocles v., who says, the same distance was marched in less than 30 days on the retreat, which had taken up six months in the approach.

[h] Agesilaus, ii. 1.

κατήνυσεν ὁ Ἀγησίλαος[i]. In like manner, Cornelius Nepos[k]: Hac igitur mente Hellespontum copias trajecit; tantaque usus est celeritate ut quod iter Xerxes anno vertente confecerat hic transierit triginta diebus. If we reckon the right-line distance from the Hellespont to Thermopylæ as before at 400 Roman miles, this would be at the rate of 13 miles and upwards a day direct, 14 or 15 by road; i. e. not more than a regular day's march for a well-trained army. The ἐνιαυσία ὁδὸς of Xenophon however, and the *anno vertente* of Nepos, must each be understood in a qualified sense. They imply only the *best* part of a year, or so much of *one* natural year as constituted the season of military operations; the interval from the vernal equinox to the autumnal. Nepos is more correct in his specification of the interval, where he alludes to it again in the life of Themistocles[l]; viz. six months, which is not far from the truth. According to our calculation, the total right-line distance being 713 Roman miles, and the average rate of the march six Roman miles a day, the whole time actually taken up by it must have been 119 days. But there were certain occasions on the road when the army was stationary; particularly, a month at the Hellespont[m]; eight days at Thermopylæ, before the army resumed its march[n]; some time at Acanthus, after the death of Artachæes[o]; and some days in Pieria (which means, at Therma, or on the Axius[p]). Let these different intervals be assumed at 41 days in all. The whole time between the departure from Sardes and the arrival at Athens, on this principle, must have been 119 + 41, or 160 days: and the day of the departure being assumed as Munychion 3, April 19, the day of the arrival must have been Boëdromion 16, September 26. The Acropolis was taken the following day; consequently Boëdromion 17, September 27: and *on* that day, by reckoning back from the day of the battle of Salamis, Boëdromion 20, September 30, it is possible to shew it must actually have been taken.

Herodotus himself has said nothing of the entire length

[i] Cf. ad ii. 1–5.
[k] Agesilaus, iv. 3.
[l] v. see p. 369. note g.
[m] Herod. viii. 51.
[n] vii. 198–201. 210—viii. 25.
[o] vii. 115–117.
[p] vii. 124. 128–131. 183.

of the march. He has told us only that, after spending *one* month at the Hellespont, Xerxes in *three* months more was now in Attica[q], when however he would still be *three* days' march from Athens. The right-line distance from Sestus to the borders of Attica was 534 Roman miles = 90 days' march, or three months of 30 days each, exactly *.

The month which was spent at the Hellespont, was taken up partly by the time of the passage, seven days and seven nights; partly and principally by the numbering of the armament at Drabescus. It appears from the account of this process, that 10,000 were numbered at a time[r]; and, supposing 10,000 numbered every hour, or 120,000 in a whole day, it would take eight days four hours to number a million; and sixteen days eight hours two millions; and 19 days to number 2,317,000, including the horsemen, and the crews of the fleet. On the whole, 20 days might well have been consumed on this census only. If the passage of the bridge previously was going on by night, as well as by day, that is an argument that there must have been moonlight; and so there would be, after May 18 at least, when the moon was nine or ten days old.

Assuming that the march from Sardes to the Hellespont (160 miles direct) must have occupied 27 days; we would arrange these events as follows.

The army sets out from Sardes	April 19	Munychion 3.
The army arrives at Abydus	May 16	Munychion 30.
Xerxes reviews the host on the plains of Abydus	May 17	Thargelion 1.
The passage of the Hellespont begins at sunrise; the moon being *nine* days old complete	May 18	Thargelion 2.
The passage is completed, the day of the full moon	May 24	Thargelion 8.
The army begins its march to Drabescus	May 25	Thargelion 9.
On the *sixth* day it arrives at Drabescus; and the enclosure for the census is prepared	May 30	Thargelion 14.
The census begins, and lasts 20 days	May 31	Thargelion 15.
The army resumes its march from Drabescus	June 20	Skirrhophorion 6.

* It is evident that this statement of his is not to be too strictly under-

q viii. 51. r vii. 60.

SECTION IV.—*On the date of the last of the battles at Artemisium and Thermopylæ.*

It is asserted by Ælian[s] that some one of the battles at Artemisium was fought on Thargelion 6; which B. C. 480 would have been May 22, when the passage of the Hellespont by Xerxes and his army was still going on. He dates Marathon and Plataea the same day; so that his authority for the true date of any of these events is absolutely nothing: though it is possible that in some of these instances his mistatements might be explained.

The real date of the actions by sea at Artemisium, and consequently of those at Thermopylæ by land, must be otherwise determined. Now, in the first place, as both lasted *three* days, the same day could not have been the date of them all. The most memorable however was the *last*, in which the pass of Thermopylæ was forced, and Leonidas with his followers sacrificed themselves. In the next place, it appears from Diodorus Siculus[t] that the defeat of the Carthaginians in Sicily by Gelo, at the battle of Himera, and this defeat of the Greeks under Leonidas (if it must be so called) at Thermopylæ by the Persians, happened the same day. Herodotus does not affirm *that* coincidence; but he too speaks of a *similar* coincidence between the defeat at Himera and the battle of Salamis[v]: Πρὸς δὲ καὶ τάδε λέγουσι ὡς συνέβη τῆς αὐτῆς ἡμέρης ἔν τε τῇ Σικελίῃ Γέλωνα καὶ Θήρωνα νικᾷν Ἀμίλκαν τὸν Καρχηδόνιον καὶ ἐν Σαλαμῖνι τοὺς Ἕλληνας τὸν Πέρσην. That something of the kind then held good, either of Thermopylæ and Himera, or of Salamis and Himera, might be inferred even from his testimony: and forasmuch as he himself spoke of the latter only as a report, and Diodorus of the former as an accredited fact, we should be bound to defer to Diodorus in this instance rather than to Herodotus. Not to say that Diodorus, as a native of Sicily, and better in-

stood. It was probably produced by the fact, that he knew the time for which Xerxes was actually on the march to have been as nearly as possible four months; for the first month, from Sardes to the Hellespont; for the other three, from the Hellespont to Athens. The month mentioned as spent at the Hellespont, was probably intended parenthetically.

[s] Variæ, ii. 25. [t] xi. 24. 23. 26. [v] vii. 166.

formed in the history of his own country than Herodotus was likely to be, (on so memorable an event too in Sicilian history as this,) would be a better authority than Herodotus, though so much younger. Besides which, he confirms the truth of his statement in this instance by the further circumstance, which he alone specifies, that the news of Himera was known at Salamis before the battle, and Gelo, preparing to go to the assistance of the Greeks after Himera, was stopped by the news of Salamis. There was time for the former between Himera (if the same with Thermopylæ) and Salamis, on the one hand, and for the latter between Salamis (Sept. 30) and the latest term of the *mare clausum* (Nov. 10, the Πλειάδων δύσις), on the other*.

In the next place, if we are permitted to treat of the ancient Punic calendar, we hope to be able to shew that there was one day in that calendar ominous above all others, from long experience of public or national calamities which happened to fall upon it—and that day the 22d of the month—and the first 22d of the month, so rendered infamous ever after, was the day of this disaster at Himera itself; and *this* 22d

* According to Herodotus, vii. 165–167, this Carthaginian expedition against Sicily was synchronous with that of Xerxes against Greece. What he relates 157–162, as passing between the Deputies from the mother country and Gelo, preceded the passage of the Hellespont (May 18–24), cf. 163. Cadmus was sent to Delphi only after the passage was known of in Sicily, yet time enough (164) to return home the same year after Salamis.

The storm which Diodorus tells of, xi. 20, as encountered by the Carthaginians in their passage to Sicily might be, and probably was, the same which the fleet of Xerxes also encountered before Artemisium. He too mentions an interval of *three* days after this, during which Amilco was recruiting his soldiers.

Aristotle, Poetica, xxiii. pag. 178. 28, alludes to these two battles, Salamis in Greece, and Himera in Sicily, as coincident in point of time: *Ὥσπερ γὰρ κατὰ τοὺς αὐτοὺς χρόνους ἥ τ' ἐν Σαλαμῖνι ἐγένετο ναυμαχία καὶ ἡ ἐν Σικελίᾳ Καρχηδονίων μάχη.* But this may be understood of their having come within a few days of each other—as was actually the case. Pindar too, Pythia, i. 147, mentions all these victories, Salamis, Platæa, and Himera, at once, but he does not say that Salamis and Himera happened on the same day; and his silence about so remarkable a coincidence is negatively an argument that they did not: cf. the Schol. *in loc.*, and ad vers. 155, and Simonides, Fragm. xlii., the epigram on the Tripod of Gelo, dedicated in consequence of his victory.

of the Punic month for the time being the Julian September 10 the same year. This then was the date of the battle of Himera; 20 days before that of Salamis, September 30: and two months before that of the Pleiadum occasus, Nov. 10. The same was consequently the date of the last of the battles at Thermopylæ, and of the last of the actions at Artemisium. On the second day after both (Sept. 12) Xerxes resumed his march. The distance from Thermopylæ to Athens direct was 93 miles, 15 days march. Hence, if he set out on the 12th, he would arrive on the 26th: on which day, we shall see by and by, he actually did arrive.

Now the date of the last of the three days' battles at Thermopylæ having been September 10 Metageitnion 29, that of the first must have been September 8 Metageitnion 27: and as Xerxes waited four days complete before his first attack [x], if we reckon the day of his arrival the first of these four, he arrived September 4 Metageitnion 23. The distance from the Head of the Sinus Thermaicus to Thermopylæ direct was 127 Roman miles, 21 days march. If then he arrived Sept. 4 Metageitnion 23, he left the Head of the Sinus August 14 Metageitnion 2: and if he spent two days there, as we have assumed he did, he arrived August 11 Hecatombæon 28. The distance from Drabescus to this quarter direct was 297 miles, 49 days march: and if he set out from Drabescus June 20, and stopped no where on the road, he must have arrived at the Sinus August 8: if he was detained two or three days at Acanthus, he would arrive on August 11.

Section V.—*On the date of the Olympia and the Carnea, B. C.* 480.

When the Persians arrived at Thermopylæ, they found Leonidas and his followers already there. The rest of the Greeks were at Artemisium. They had come thither previously from the Isthmus [y]; and they left the Isthmus on hearing that Xerxes was in Pieria: and Xerxes was in Pieria between August 8 and 14. The Greeks therefore could not have left the Isthmus before August 8 or 14.

Now with respect to this mission of Leonidas, Herodotus tells us [z], Τούτους μὲν τοὺς ἀμφὶ Λεωνίδην πρώτους ἀπέπεμψαν

[x] vii. 210, 211. [y] vii. 177. [z] vii. 206.

Σπαρτιῆται, ἵνα τούτους ὁρῶντες οἱ ἄλλοι σύμμαχοι στρατεύωνται, μηδὲ καὶ οὗτοι μηδίσωσι ἢν αὐτοὺς πυνθάνωνται ὑπερβαλλομένους. μετὰ δὲ, Κάρνεια γάρ σφι ἦν ἐμποδὼν, ἔμελλον ὁρτάσαντες, καὶ φυλακὰς λιπόντες ἐν τῇ Σπάρτῃ, κατὰ τάχος βοηθέειν πανδημεί. ὡς δὲ καὶ οἱ λοιποὶ τῶν συμμάχων ἐνενῶντο καὶ αὐτοὶ ἕτερα τοιαῦτα ποιήσειν· ἦν γὰρ κατὰ τωὐτὸ Ὀλυμπιὰς τούτοισι τοῖσι πρήγμασι συμπεσοῦσα.

This allusion to the Olympia and the Carnea respectively has given occasion to much difficulty in the chronological arrangement of these events: and though the difficulty after all is only apparent, yet we cannot excuse Herodotus himself from something like confusedness and inconsistency in this part of his accounts. With respect to the cycle or period of these games, both were quadriennial; and B.C. 480 was an Olympic year in the proper cycle of the Olympic games, and a Carnean one too in that of the Carnea. With respect to the order; the Olympia were the earlier, the Olympic month being properly Hecatombæon, the Carnean Metageitnion: and it may be inferred from a subsequent allusion [a], that such was the order in which both were actually celebrated this year, the Olympia first, the Carnea afterwards; as well as that both were over, though only recently, between the death of Leonidas, Sept. 10, and the arrival of Xerxes at Athens, Sept. 26.

The Octaëteric cycle, as we have explained [b], though liable to an anticipation of the calendar lunar dates on the true, yet allowance being made for this tendency, was almost as perfect a measure of lunar time as the Metonic cycle itself. The error was stated; it could be neither more nor less than 36 hours in every single cycle, and 72 hours (three days) every two cycles. The Olympia and the Carnea were both regulated at this time by the Octaëteric cycle, the one at Elis the other at Sparta; and the cycle which regulated both was absolutely the same with the Attic of Solon. They were both attached to certain lunar dates, each in its proper month; and each followed this proper date through the decursus of its proper period and proper cycle: this date in the former being the eleventh of the true mean new moon of

[a] viii. 71, 72. [b] Supra, page 37-41.

Hecatombæon, and in the latter the seventh of the true mean new moon of Metageitnion.

Now, B. C. 480, in the decursus of the first Period of the Octaëteric Correction of Solon, corresponding to Cycle xv. 1—the true mean new moons at the ingress of this cycle were 21 days complete in advance of those of the calendar[c]. The mean new moon of Hecatombæon, for example, was now the 22nd of that month, August 5, instead of the first, July 15; and the mean new moon of Metageitnion was the 22nd of that month too, September 3, and not the first, August 13: of which latter fact any one may satisfy himself by reckoning back one half-lunation, or 14 d. 18 h. 22 min. of mean time from the date of the lunar eclipse the same year, September 18, 7 30 A. M. Paris.

Assuming then that, while the calendar at Olympia and Sparta was still regulated by the Octaëteric cycle, both the Olympic and the Carnean feriæ followed the true mean lunar dates to which they were originally attached; we shall account for the occurrence of both the Olympia and the Carnea at this particular period in the course of the march of Xerxes: and we shall confirm the testimony of Herodotus to the fact of such a coincidence, in a manner beyond exception. For on this principle the Olympia this year (Ol. lxxv. 1.) would begin to be celebrated Aug. 15, and last till Aug. 20; and the Carnea would begin to be celebrated September 9 and last to September 17. It might truly then have been said, any time between August 8 and 14, (between which dates it was evidently possible that the news of Xerxes his being in Pieria might be received in Greece,) that the Olympic festival was then close at hand, to prevent the rest of the Greeks in general from taking the field just then; and that the Carnea were not far distant, to prevent the Lacedæmonians in particular from doing so.

It is however a singular coincidence that even after this, when Xerxes (to judge from the context of Herodotus) had just resumed his march, certain Arcadians are said to have met him[d], offering their services as mercenaries; and when they were asked what the rest of the Greeks were doing,

[c] Vide the Table, p. 42. [d] viii. 26.

answered, according to Herodotus, That they were keeping holiday at Olympia, and witnessing a contest of athletes and horses. There can be no doubt that this is a description of the Olympic games; or if there were, it would be removed by the nature of the prize for which they were said to be contending also—a chaplet of olive. Yet if these Arcadians actually met Xerxes just as he was leaving Thermopylæ; it was impossible that the Olympic games could have been going on *then*. How then are we to account for this statement, which seems to imply that they were?

In the first place, it is no necessary inference that these Arcadians did actually meet Xerxes just as he was leaving Thermopylæ. The context before and after indeed may appear to imply it; but there is not a word in the text which positively asserts it. We are at liberty therefore to suppose that while Herodotus might have rightly represented the fact in general (viz. that some Arcadians did actually meet Xerxes, and offer him their services), he may have misrepresented the time of the fact in particular; and that the Arcadians both might have met, and probably did meet Xerxes, when he was setting out on his march from Pieria; which being about August 11 or 12, would be exactly the time when the Olympic games were going on.

Or secondly, this mistake might have been produced by confounding the Carnea with the Olympia. The latter must have been over some time before Xerxes could have left Thermopylæ; the former would be going on at that very time. The date of the resumption of the march was September 12 — the fourth of the Carnean feriæ themselves; and as there were nine of these feriæ, it is manifest that any time between Sept. 9 and Sept. 17 these Arcadians might have told Xerxes that the Greeks were keeping festival and celebrating a contest of music: and it would have been as apposite to what must have been going on at the Carnea at that very time, as it would have been inapplicable to what was going on at Olympia.

Nor is it inconsistent with these explanations that even after the Olympia and Carnea were over[c], the Greeks of the

[c] viii. 71, 72. 40.

Peloponnese are represented as flocking to the isthmus, and raising the wall across it, before the battle of Salamis itself. *This* is not supposed to have been done before the death of Leonidas was known of in the Peloponnese; and as his death happened 170 miles from Sparta, it could not have been known of there in less than four or five days' time; nor could they and the rest of the Peloponnesians have been assembled at the isthmus in less than five or six days more. On the whole, they could not have all been collected there before Sept. 20 or 21 at the earliest, when the Carnea would be over, as well as the Olympia. Between this time and that of the battle, Sept. 30, there would be nine or ten days; within which, when we consider the breadth of the isthmus, the numbers employed on the work, and their labouring upon it by night as well as by day, it is not too much to suppose the wall might have been completed. Their working by night as well as by day [f] is an argument that for some part of the time they had the benefit of moonlight; and as the moon was at the full September 18, it would still continue to give more or less light until within a few days of the change.

Section VI.—*On the date of the actions at Artemisium.*

The fleet of Xerxes (left at Therma, when he himself set out to Thermopylæ,) followed him eleven days after his departure [g]. If he then set out on August 14, the fleet must have done so on August 25. Herodotus has not told us how long they were in overtaking him; but it may be collected from the context that it took them *ten* days to arrive at Sepias only. For the storm which set in the morning after their arrival [h] lasted *three* days [i]. On the *fourth* it ceased, and the next (the *fifth*) the fleet removed to Aphetæ [k]; where they arrived περὶ δείλην πρωΐαν [l], which means early in the afternoon. The Greeks attacked them there, the same day, περὶ δείλην ὀψίαν [m]: and this consequently was the first of the three days' actions at Artemisium, corresponding to the first of the three days' contests going on at Thermopylæ.

f viii. 71. g vii. 121–124: 127. 183. h vii. 188. i 191, 192. k 193. 196. l viii. 6. cf. 7–9. m viii. 9.

The date of both therefore was Sept. 8, Metageitnion 27. It was also the *fifth* day since the arrival at Thermopylæ, as well as the *fifth* since the storm; consequently the *sixth* since the arrival at Sepias. They arrived then Sept. 3, Metageitnion 22: as the context implies[n], at the end of the day; *ten* days therefore after they set out; so that they must have set out August 25, Metageitnion 13. The storm began the next morning, *ἅμα ὄρθρῳ, ἐξ αἰθρίης τε καὶ νηνεμίης τῆς θαλάσσης ζεσάσης*; accompanied with the wind called ἀπηλιώτης, or Ἑλλησποντίης, because it blew from the east or north east*, which occasioned the wreck of the fleet on the coast along which it was moored. The coincidence is a remarkable one, as the moon too was new only Sept. 3, the day before the storm. There was a second storm on the night of the first day's action; which caused the wreck of the 200 ships detached on the day of the arrival at Aphetæ[o], before the battle, to sail round Eubœa[p]: the account of which is thus ushered in by Herodotus[q]: Ὡς δὲ εὐφρόνη ἐγεγόνεε (Sept. 8, at night) *ἦν μὲν τῆς ὥρης μέσον θέρος, ἐγίνετο δὲ ὕδωρ τε ἄπλετον διὰ πάσης τῆς νυκτὸς, καὶ βρονταὶ σκληραὶ ἀπὸ τοῦ Πηλίου κ᾽, τ. λ.* and the moon was then *five* days old. The most remarkable circumstance of this description is the *μέσον θέρος*, which would properly denote midsummer, or according to the Greek idiom an earlier season†. But even if the course of events *before*, and

* The Etesian winds which blew from the north, commonly ceased at the beginning of September; the very time at which the fleet of Xerxes was arriving in this quarter. The wind from the east or north east, which they encountered so soon after, was the same which St. Paul encountered in his voyage to Rome, A. D. 58—(see our Prolegomena ad Harmoniam Evangelicam, 275 sqq.)—though at a somewhat later time of the year: and its name, in these parts, at that time appears to have been one compounded of Εὖρος and Ἀκύλων or Aquilo, Εὐρακύλων, not Εὐροκλύδων.

The regular Etesian winds of the year were alluded to vii. 168, in the answer ascribed to the Corcyræans, which evidently belongs to an earlier period in these transactions than these battles at Artemisium, though not much earlier.

† A storm of thunder and lightning by night was mentioned historically when Xerxes was in the neighbourhood of Mount Ida, May 16 or 17, vii. 42: and there was an allusion to the time of the year, on the same occasion, vii. 50. (*ὥρην τε τοῦ ἔτεος καλλίστην πορευόμεθα*) which would much more

[n] vii. 188. [o] viii. 7. [p] viii. 13. [q] 12.

the course of events *after*, down to the battle of Salamis, did not prove that this arrival at Aphetæ must have been long after midsummer; the very affections of the air, the rain in the night, the thunder, and the storm after both, would be decisive that the season must have been approaching to the autumnal equinox *.

The three days then of the battles, going on in each of these localities, must have been Sept. 8, 9, and 10, Metageitnion 27, 28, and 29 respectively. On the second day [r], September 9, the secret of the pass was betrayed. Hydarnes set out with his detachment, περὶ λύχνων ἁφὰς [s], at nightfall or dusk; and marched all the night [t], and by daybreak reached the summits of the mountains [t]: and the weather was then calm,

truly have characterized the season of midsummer, in the idiom of the Greeks, the time itself being May 17.

In like manner the same unsettled state of the weather, characteristic of the end of summer and the beginning of autumn, is again implied in the account of the attempt of the Persians on Delphi, about the middle of September, and of the mode in which it was defeated. Cf. Herodotus, viii. 37: Diodorus, xi. 14: Justin, ii. 12.

* Whether Herodotus really supposed the season was now midsummer, we cannot undertake to say. His allusion to the Olympic Games, after this, as going on even then, might imply as much. But it was most probably an observation introduced without reflection.

As to the rest of his account, there is no difficulty, except what is occasioned by vii. 196; which appears to intimate that the fleet arrived at Aphetæ on the *third* day after Xerxes' coming to Thermopylæ. But if he had been arrived *four* days before his first attack on the Greeks (vii. 210), and the day of the first attack of the Greek fleet on the Persian was that of the arrival of the latter at Aphetæ, the fifth from their arrival at Sepias; that could not have been the case. Either then the note of time, vii. 196, *τριταῖος*, as referred to Xerxes, should be *πεμπταῖος*, or it is not the arrival of the fleet at Aphetæ, but at Sepias, which is to be understood by it relatively to them. Xerxes might have been *three* days in the country of the Melians, though not yet come to Thermopylæ, when the fleet arrived at Sepias. By these means all will be rendered consistent. The next day he might arrive at Thermopylæ, and the storm would begin. The four days for which he waited at Thermopylæ, and the four of the storm, would thus be the same. On the fifth he would begin his attack on the pass; and the same day, the fleet having moved to Aphetæ previously, in the evening would be attacked by the Greeks. The first battle at Thermopylæ and the first action at Artemisium would thus strictly belong to the same day.

[r] vii. 212, 213. [s] 215. [t] 217.

ἦν μὲν δὴ νηνεμίη [v]—as it might be on the morning of Sept. 10, six days after the storm. But there is no mention of the moon; and on the night of Sept. 9 it would be only six days old, and of no service after midnight. The third day's action at Artemisium was begun by the Persians at noon [x]. At the close of the day the Greeks heard of the death of Leonidas [y], which determined them to retreat the same night [z]. At sunrise the next morning, Sept. 11, Metageitnion 30, the Persian fleet moved to Artemisium [a]: and here the herald of Xerxes, summoning the crews to Thermopylæ, evidently arrived the same day [b]. And this visit being over, the next day, Sept. 12, Boëdromion 1, they returned to their ships, and Xerxes resumed his march.

SECTION VII.—*On the date of the evacuation of Athens, and of the decree of Themistocles.*

The retreat of the Greeks from Artemisium began on the night of Sept. 10, Metageitnion 30 by the Attic reckoning; after the day's action was over [c]. At the request of the Athenians, the rest repaired to Salamis [d], where they were joined by the remainder of their ships which had been assembling at Trœzen [e]; while the Athenians went to their own city.

From the account of the movements of the Persian fleet in the same direction, afterwards [f], it may be inferred that to sail from Artemisium to Athens, even by the shortest course, might require *three* days. The Athenians therefore would probably arrive at their own homes Sept. 13, the 3rd of Boëdromion, there being no *second* of that month; and consequently the deliberations relating to the evacuation of the city could not have begun before Sept. 13 or 14, Boëdromion 3 or 4.

The memorable decree, passed on this occasion (commending the city to the care of its tutelary goddess, disposing of the women and children at Trœzen, of the old men at Salamis, and with all the rest of the military age arming and manning the fleet,) is attributed to Themistocles [g], as that

[v] 218. [x] viii. 15–18. [y] viii. 21. [z] 21. 23. [a] 23. [b] 24. 25. [c] viii. 21–23. [d] viii. 40. 41. [e] 42. [f] 66.

[g] Plutarch, Themistocles, x.: Aristides, xiii. Panathenaicus, 225 last line—226. l. 3 from bottom: xlvi. ὑπὲρ

before Marathon was to Miltiades. As to its date, we may infer[h] it had been already passed and executed before, but not long before[i], Xerxes' arrival in Attica: and he would reach the borders of Attica September 23, Boëdromion 13, but even then would be *three* days' march from Athens, which he did not ultimately reach before Sept. 26, Boëdromion 16.

Now as the decree must have been past either in one of the regular assemblies, or in an extraordinary one; the stated times of such assemblies were the *eleventh*, the *twentieth*, and the *thirtieth* of the month[k]. The last of this kind consequently must have been Metageitnion 30, Sept. 11: but *then* the fleet had not yet come home. The next would be Boëdromion 11, Sept. 21; and on this day the decree might have been passed, and we should be of opinion it actually was. For as Xerxes was still a good way off, and the rate of his march must have been well known, it was easy to calculate when he might be expected to enter Attica. There was no reason consequently why the people should precipitate their departure from the city; which they would naturally be unwilling to leave until the last moment, and which some of them did not leave as it was. And even if the date of the decree was Sept. 21, Boëdromion 11, it would still be two days earlier than the arrival in Attica, Sept. 23, and five days earlier than the arrival at Athens, Sept. 26.

It may be further observed, that the fact which Herodotus mentions of the serpent[l], supposed to have been kept in the Acropolis*, *after* the arrival of the fleet, but *before* the

* Hesychius, Οἰκουρὸν ὄφιν· τὸν τῆς Πολιάδος φύλακα δράκοντα. καὶ οἱ μὲν ἕνα φασὶν οἱ δὲ δύο, ἐν τῷ ἱερῷ τοῦ Ἐρεχθέος. τοῦτον δὲ φύλακα τῆς ἀκροπόλεώς φασιν, ᾧ καὶ μελιττούτταν παρατίθεσθαι. Cf. Phot. Lex. in voce: . . Φύλαρχος δὲ αὐτοῦ δύο (λέγει)—

Ἀλλ' οὐ δύναμαι 'γωγ' οὐδὲ κοιμᾶσθ' ἐν πόλει,
ἐξ οὗ τὸν ὄφιν εἶδον τὸν οἰκουρόν ποτε.
Lysistrata, 758.

— Τὸν ἱερὸν δράκοντα τῆς Ἀθηνᾶς, τὸν φύλακα τοῦ ναοῦ. The date of

τῶν τεττ. 251. 26: 256. 4: Scholia, 175. 1: 585. l. 2 from bottom: 600. 8: Cornelius Nepos, Themistocles, ii. 8: Seneca Rhetor, Controversiæ, ii. xiii. 186: Frontinus, De Strateg. i. iii. 6.

h viii. 49.
i 50.
k See supra, page 48.
l viii. 41.

evacuation of the city, is some proof that both these things were later than the beginning of the month at least. Plutarch[m] implies, that this serpent received a daily allowance of food; and no doubt it must have been fed every day: but Herodotus gives us to understand that, over and above, as we construe his statement, it had an honey cake (*μελιτόεσσα*) furnished it once a month, (*ἐπιμήνια*); and therefore we may presume on the *first* of the month. Now this monthly cake had already been served out to it before the deliberations about the evacuation of the city began; and when they were going on was found to have been still unconsumed. They were going on then later than the first of Boëdromion at least.

Plutarch[n] proceeds: *Κυρωθέντος δὲ τοῦ ψηφίσματος, οἱ πλεῖστοι τῶν Ἀθηναίων ὑπεξέθεντο γονέας καὶ γυναῖκας εἰς Τροιζῆνα, φιλοτίμως πάνυ τῶν Τροιζηνίων ὑποδεχομένων. καὶ γὰρ τρέφειν ἐψηφίσαντο δημοσίᾳ, δύο ὀβολοὺς ἑκάστῳ διδόντες, καὶ τῆς ὀπώρας λαμβάνειν τοὺς παῖδας ἐξεῖναι πανταχόθεν, ἔτι δ' ὑπὲρ αὐτῶν διδασκάλοις τελεῖν μισθούς*[o]. And the mover of this decree at Trœzen, he tells us[n], was Nicagoras. The most important circumstance in this statement, so far as concerns the chronology of these proceedings, is the permission given by the decree to the children of the Athenians, *Τῆς ὀπώρας λαμβάνειν πανταχόθεν*. The different senses of this word *ὀπώρα*, the name primarily of a particular period of the natural year, and secondarily of the productions of that season, have been explained supra[p]. In this instance, there can be no doubt it is to be restricted not only to its secondary sense of the summer fruits in general, but to that description of such fruits in particular, as are the production of the vine. And hence a very conclusive argument of the time of the year; and altogether to the same effect as our previous reasonings concerning it.

this play was B.C. 411. Philostratus Junior, Icones, ii. 806. D. Insulæ, asserts the fact of its existence still in his time: *Καὶ ὁ δράκων δὲ ὁ τῆς Ἀθηνᾶς, ὁ ἔτι καὶ νῦν ἐν ἀκροπόλει οἰκῶν.*

[m] Themistocles, x.
[n] Themistocles, x.
[o] Cf. Demosthenes, Epp. B. § 18. 20: Pausanias, ii. xxxi. 10: Corn. Nepos, Themistocles, ii. 8: Cicero, de Officiis, iii. 11, 48.
[p] Page 296 supra, note.

In Plato's dialogue, De Legibus, a law occurs, prescribing the time before which it should not be lawful to gather the *ὀπώρα* in this sense; i. e. the produce of the vineyards [q]: *Ὀπώρας δὲ δὴ χρὴ κοινωνίαν ποιεῖσθαι πάντας τοιάνδε τινά. διττὰς ἡμῖν δωρεὰς ἡ θεὸς ἔχει χάριτος αὕτη......ἔστω δὴ περὶ ὀπώρας ὅδε νόμος ταχθείς. ὃς ἂν ἀγροίκου ὀπώρας γεύσηται...πρὶν ἐλθεῖν τὴν ὥραν τὴν τοῦ τρυγᾷν, Ἀρκτούρῳ σύνδρομον, εἴτ' ἐν τοῖς αὐτοῦ χωρίοις εἴτε καὶ ἐν ἄλλων, ἱερὰς μὲν πεντήκοντα ὀφειλέτω τῷ Διονύσῳ δραχμὰς κ', τ. λ.* [r] That even this was considered a subject grave and serious enough to be expressly provided for by law, appears not only from this passage, but from Pliny [s]: Vindemiam antiqui nunquam existimavere maturam ante æquinoctium: jam passim rapi cerno.... Leges ita se habent: Uvam calidam ne legito, &c. And from Plutarch [t]: *Διὸ καὶ παρ' ἡμῖν τὸ μὲν στεφανηφορεῖν καὶ κομᾷν καὶ μὴ σιδηροφορεῖν, μηδὲ τοῖς Φωκέων ὁρίοις ἐμβαίνειν, ἴδια λειτουργήματα τοῦ ἄρχοντός ἐστι· τὸ δ' ὀπώρας μὴ γεύεσθαι πρὸ ἰσημερίας μετοπωρινῆς, μηδ' ἄμπελον τέμνειν πρὸ ἰσημερίας ἐαρινῆς, ὁμοῦ τι πᾶσι δηλοῦται διὰ τοῦ ἄρχοντος. ἑκατέρου γὰρ ὁ καιρὸς ἐκεῖνός ἐστι.* And that it was still the rule in his time, not to gather the grapes before the rising of Arcturus, appears from another casual allusion in his works: *Ὁ δὲ βότρυς κρέμαται καὶ προσπέφυκεν, ἔτι τὸν Ἀρκτοῦρον ἐκδεχόμενος* [v].

Now it is self-evident that it was not the object of this decree of the Trœzenians to dispense with this general obligation to abstain from the fruit, growing on the vines, until it was ripe, which the law made incumbent upon all persons alike; but simply with the right of property in it, when it was ripe. From the fact then of their passing such a decree in behalf of the children of the Athenians, as soon as they were committed to their care, we may argue that, even before they received them in charge, the proper season, defined by the laws, for gathering the grape, the season described by Plato as *Ἀρκτούρῳ σύνδρομος*, must already have been come, or close at hand.

This season was that of the heliacal rising of Arcturus [x].

[q] iii. iii. 106. 8: De Legibus, viii.
[r] Cf. Athenæus, xiv. 68.
[s] H. N. xviii. 74. p. 261.
[t] Quæstiones Romanæ, xl.
[v] De vitando ære alieno, ad fin.
[x] See supra, p. 286.

In Hesiod's time, this phenomenon, as ushering in the beginning of vintage, was September 16: and it would be the same, within a day, in the time of Plato. In Hesiod's time too it was occurring only eleven days before the mean autumnal equinox, Sept. 27, and only thirteen before the true, Sept. 29: and B. C. 480, the mean equinox was falling on the same day, the true, one day only earlier at the utmost, and possibly on the same day still. It may be assumed with confidence then, that for the parallel of 37·30 N., which included Trœzen, the grapes would be ripe, and the vintage ready to begin, between September 16 and 27, B. C. 480 *:

* Of this secondary sense of *ὀπώρα*, the following are examples:

Τέρειν' ὀπώρα δ' εὐφύλακτος οὐδαμῶς·
θῆρες δὲ κηραίνουσι καὶ βροτοί τί μιν,
καὶ κνώδαλα πτεροῦντα καὶ πεδοστιβῆ [1].

Γλαυκῆς ὀπώρας ὥστε πίονος ποτοῦ
χυθέντος εἰς γῆν Βακχίας ἀπ' ἀμπέλου [2].

Ἔστι γάρ τις ἐναλία
γῆς Εὐβοείας· τῇδε Βάκχειος βότρυς
ἐπ' ἦμαρ ἕρπει· πρῶτα μὲν λαμπρᾶς ἕω
κεκλημάτωται χῶρος [3] *εὐανθὲς* [4] *δέμας·*
εἶτ' ἦμαρ αὔξει μέσσον ὄμφακος [5] *τύπον·*
καὶ κλίνεταί γε, κἀποπερκοῦται βότρυς.
δείλῃ δὲ πᾶσα τέμνεται βλαστουμένη
καλῶς ὀπώρα, κἀνακίρναται ποτόν [6].

Ὡς δ' ὅτ' ἐν οἰνοπέδῳ τις ἐπαΐσσοντας ὀπώρῃ
σφῆκας τερσομένῃσι παρὰ σταφυλῇσι δαμάσσῃ,
οἱ δ' ἄρ' ἀποπνείουσι πάρος γεύσασθαι ὀπώρης [7].

Ἀργαλέοις σφήκεσσιν ἐοικότες οἵ τ' ἀλεγεινὸν
ἐκ θυμοῦ κοτέοντες ἐπιβρίσωσι μελίσσαις,
εὖτε περὶ σταφυλῆς αὐανομένης ἐν ὀπώρῃ
ἐρχομένας ἐσίδωσιν, ἢ ἐκ σίμβλοιο θορούσας [8].

1 Æschylus, Ἱκετίδες, 998.

2 Soph. Trachiniæ, 703.

3 Corrige, *χλωρὸν οἰνάνθης*.

4 Schol. ad Ranas, 1355. *ἡ πρώτη ἔκφυσις τῆς ἀμπέλου οἰνάνθη λέγεται.* Cf. ad Aves, 589.

5 Cf. Æschylus, Agamemnon, 970. *Ὅταν δὲ τεύχῃ Ζεὺς ἀπ' ὄμφακος πικρᾶς οἶνον κ', τ. λ.*

6 Soph. Fragm. Θυέστης δεύτερος. Cf. Schol. ad Phœnissas, 227: ad Antigonen, 1133: Eustathius ad Il. N. 21. 917. 37.

7 Quintus Smyrnæus, x. 114.

8 Ibid. xi. 146.

With regard to the vintage season in general—

Præterea, quur vere rosam frumenta calore,
Viteis autumno fundi sudante videmus,
Si non, certa suo quia tempore semina rerum
Cum confluxerunt, patefit quodcunque creatur[9]?

---

*Ναὶ μὴν ἀτμένιόν τι κεραιόμενον λίπος οἴνῃ
ἢ χιόνι γλυκέος μίγδην πόσις ἄλγος ἐρύξει,
ἦμος ὑπὸ ζάγκλῃσι περιβρίθουσαν ὀπώρην
ῥυσσαλέην ἐδάνοιο καὶ ἐκ ψιθίης ἐλίνοιο
κείροντες θλίβουσιν, ὅτε ῥοιζηδὰ μέλισσαι,
πεμφρήδων, σφῆκές τε, καὶ ἐκ βέμβικες ὄρειαι
γλεῦκος ἅλις δαίνυνται, ἐπὶ ῥαγέεσσι πεσοῦσαι,
πιοτέρην ὅτε βότρυν ἐσίνατο κηκὰς ἀλώπηξ*[10].

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*Ἔξοχα γὰρ τελέθουσι καὶ ἵπποις καὶ μερόπεσσι
καὶ κυσὶν ὠμηστῇσι θέειν εὔκραέες ὧραι,
εἴαρι χρυσείῳ κ', τ. λ. . .
ἢ πάλιν ἐσχατίῃσιν ὀπωρινῇσι τροπῇσιν,
ἡνίκα δῶμα τέθηλεν ὀπωρολόγοιο γεωργοῦ,
καρπὸς Ἀθηναίης λιπαρὴν ὅτε γαυλίδα πλήθει,
καὶ βότρυν ἡμερίδων θλίβων ἐπιλήνια χαίρει,
σίμβλα μελισσάων ὅτε λείρια κήρια βρίθει*[11].

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*Βρίθω ἐγὼ σταφυλῇ βρίθω δ' ἔτι πάσῃ ὀπώρῃ·
αὖθις δ' ἰσοπαλὴς γίνεται ἤματι νύξ*[12].

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*Τίς δέ κ' ἐμεῖο πέλει γλυκερώτερος; ὃς μέθυ ληνῷ
ἡδυέπη κατάγω Βάκχον ἀπ' οἰνοπέδου*[13].

Daphni quid antiquos signorum suspicis ortus?
Ecce Dionæi processit Cæsaris astrum:
Astrum quo segetes gauderent frugibus, et quo
Duceret apricis in collibus uva colorem[14].

Ad mensem adludit Julium, qui dictus est in honorem Cæsaris: quo et uvæ et frumenta maturescunt—Ad .. Canis ortum (July 19 or 20) nigrescente acino, . . . et cum defloruerit et variante se uva[15]—*Τῇ πρὸ ϛ' καλενδῶν* (sc. *Αὐγούστων* July 27) *καῦμα ἐκ τοῦ κυνός· ἡ δὲ σταφυλὴ ἄρχεται περκάζειν*[16].

Et varios ponit fœtus autumnus, et alte
Mitis in apricis coquitur vindemia saxis[17].

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9 Lucretius, i. 175.

10 Nicander, Alexipharmaca, 178.

11 Oppian, *Κυνηγετικά*, i. 117.

12 Anthologia, iii. 219. *Μῆνες Ῥωμ.* September.

13 Ibid. October.

14 Virgil, Eclog. ix. 46. Cf. Servius in loc.

15 Pliny, H. N. xvii. 35. § 17. 674.

16 Calendar of Claudius Thuscus, apud Lydum, De Ostentis, p. 371. 3.

17 Georgica, ii. 521.

Tum Liber gravida descendit lenis ab ulmo,
Pinguiaque e pressis exspumant musta racemis[18].

Sæpe sub autumnum cum formosissimus annus,
Plenaque purpureo subrubet uva mero[19].

Oceani sitiens cum jam Canis hauserit undas,
Et paribus Titan orbem libraverit horis,
Cum satur autumnus, quassans sua tempora pomis,
Sordidus et musto, spumantes exprimet uvas[20].

Sæpe per autumnum, jam pubescente Lyæo,
Conscendit scopulos, noctisque occulta sub umbra
Palmite maturo rorantia lumina tersit
Nereïs, et dulces rapuit de collibus uvas:
Sæpe et vicino sparsa est vindemia fluctu[21].

Jam Phœbus breviore via contraxerat ortum
Lucis, et obscuri crescebant cornua somni:
Jamque suum victrix augebat Cynthia regnum:
Et deformis Hiems gratos carpebat honores
Divitis Autumni, visoque senescere Baccho
Carpebat raras serus vindemitor uvas[22].

Puto magis intelligi si dixero mensis erat October, dies tertius Idus Octobris[23].

We have seen that in the Attic calendar the month Pyanepsion, the extreme limits of which were Sept. 19 and Oct. 15, was the vintage month[24]—Ἄμπελον ἰσημερίας ἐαρινῆς σκάψας μετοπωρινῆς ἐτρύγησε[25]—Ὅταν δὲ καιρὸς ᾖ ὑπὸ τοῦ ἡλίου ἤδη γλυκαίνεσθαι τὰς σταφυλὰς, φυλλορροοῦσα διδάσκει ἑαυτὴν ψιλοῦν, καὶ πεπαίνειν τὴν ὀπώραν[26]. In the account of the expedition of Brasidas, B.C. 424[27], Thucydides brings him to Acanthus ὀλίγον πρὸ τρυγητοῦ[28]. Directly after he adds, Ταῦτα μὲν οὖν ἐν τῷ θέρει τούτῳ ἐγένετο[29]: and then, Τοῦ δ' ἐπιγιγνομένου χειμῶνος εὐθὺς ἀρχομένου[30] κ', τ. λ. The season of vintage therefore this year at Acanthus was not later than the close of his chronological summer, and the beginning of his chronological winter; i.e. than the autumnal equinox.

There was a star in the constellation of Virgo, called in Greek προτρυγητὴρ, in Latin Vindemitor: in both, because it was the harbinger of the vintage season.

18 Manilius, Astronom. iii. 662. De Libra, cf. ii. 658, 659.

19 Ovid, De Arte Amandi, ii. 315. cf. Metam. ii. 29.

20 Columella, x. De Hortorum Cultu, 41.

21 Statius, Silvæ, ii. ii. 100.

22 Seneca, iv. 376. De Morte Claudii Cæsaris, ii. 1.

23 Ibid. § 2. cf. i. § 1.

24 Supra, pag. 117 sqq.

25 Plutarch, De Amore Prolis, iv.

26 Xenophon, Œconomica, xix. 19.

27 Thucyd. iv. 52.

28 Ibid. 84. cf. 88.

29 Cap. 88.

30 Cap. 89.

Τῆς ὑπὲρ ἀμφοτέρων ὤμων εἱλίσσεται ἀστὴρ
δεξιτερῇ πτερυγί· προτρυγητὴρ δ' αὖτε καλεῖται[31]—

Πρὸ γὰρ τῆς τοῦ τρυγητοῦ ὥρας ὀλίγον προσανατέλλει[32]. This star was one of those on the shoulder of Virgo. Vitruvius calls it Lucidissima stella; quam nostri Provindemiam majorem, Græci *προτρύγετον* (corr. *προτρύγητον*) vocitant[33]—xi kal. Sept. Cæsari ... stella, quæ Vindemitor appellatur, exoriri mane incipit, Vindemiæ maturitatem promittens. ejus argumentum erunt acini colore mutati[34]. Columella calls it Vindemiator, and dates its heliacal rising vii kal. Sept.[35] *

Justum vindemiæ tempus ab æquinoctio ad Vergiliarum occasum dies xliv[36]. So Varro; 32 days, Inter æquinoctium autumnale et Vergiliarum occasum[37]. Columella dates the first ripening of summer fruits after the rising of the dog-star[38], the next after that of Arcturus[39], and the vintage after the Vulcanalia (August 23)[40]: and for Bœtica and Africa, the latter half of August[41], and in some quarters the first half of September[42], and for colder climates the first half of October[43]. The Geoponica (from Varro and the Quinctilii[44]) date the early vintage in August[45], the regular one in October[46]. The old Rustic calendar in the latter half of October[47]. There is an epigram in Martial which implies that the grape gathering might extend into the month of November.

Hic post Novembres imminente jam bruma
Seras putator horridus refert uvas[48]—

and Pliny had seen it going on in Italy, under peculiar circumstances, even as late as the kalends of January[49].

Hesychius, *Θηλόπεδα·* (corr. *θειλόπεδα·*) *ὁ τόπος ἐν ᾧ ξηραίνεται ἡ σταφυλή· εἴρηται δὲ ἀπὸ τοῦ θέρεσθαι ἐν τῷ ἡλίῳ καὶ τῷ πέδῳ*—Proclus[50]: *Τοὺς βότρυς ἐκτεμόντες ἐτίθεσαν ὑπὸ τὸν ἥλιον, ἐξικμάζοντες αὐτῶν διὰ τῆς ἡλιώσεως τὸ λεπτὸν καὶ ὑδαρὲς καὶ εὔτρεπτον. καὶ ἐκάλουν τοῦτο θειλοπεδεύειν. μετὰ δὲ τοῦτο ἐν τῇ σκιᾷ πάλιν διετίθεντο ... καὶ τρίτον οὕτως ἐπάτουν, ἐκθλίβοντες τὸν οἶνον κ', τ. λ.* Galen[51] shews that grapes and figs might be kept two months, and people might live on them, and nothing else, all the time[52].

31 Aratus, Phænomena, 137.
32 Schol. in loc. cf. ad 150.
33 ix. 3. 271.
34 Pliny, H. N. xviii. 74. 258.
35 xi. 2. § 58.
36 Pliny, xviii. 74. 264.
37 De Re Rust. i. 34. cf. 28.
38 De Hortorum Cultu, l. 400.
39 l. 413.
40 l. 419 to the end.
41 De Re Rust. xi. 11. 60. Cf. Palladius, ix. tit. i.
42 Ibid. § 64. cf. 67, the last half of September. Cf. Palladius, x. xi. § 1.
43 Ibid. 74.
44 Cf. iii. 1.
45 iii. xi.
46 iii. xiii.
47 Apud SS. de Re Rustica, 854.
48 iii. 58. 8.
49 H. N. xviii. 74. 265.
50 Ad Hesiod. Opera et Dies, 610.
51 vi. 573. 4. from bott. *περὶ τροφῶν δυνάμεως*, ii. 9.
52 Cf. Gaza De Mensibus, v. Uranolog. 287. B–C. viii. 290 E. 291 A.

* For the latitude of Attica, Euctemon, (apud Geminum) dated the same phenomenon (the heliacal rising of *Προτρυγητὴρ*) on the tenth day in Virgo, September 7.

and this would be a very critical coincidence. For the decree of the Athenians could not have been passed earlier than September 21; and however soon after it might have been acted on, and their children conveyed to Trœzen, this decree, empowering them to make free with the grapes wheresoever they might be found, could not have been passed before Sept. 22, or 23, or 24: the very time at which, but not before, the laws of their own country, like those of the rest of the Greeks, allowed the grape-gathering to begin.

SECTION VIII.—*On the date of the Capture of Athens, and of the Citadel.*

The date of the arrival at Athens [y], and consequently that of its occupation by Xerxes, according to our previous arrangements, and the course of subsequent events, must have been Sept. 26, Boëdromion 16. The capture of the citadel, or πόλις, as the next event, must be dated the same day, or the next: and in our opinion, on the next [z], Sept. 27, Boëdromion 17, as more agreeable to the context. On the day after, the messenger must have been despatched, who was to carry the news of the capture to Susa [a] *. For on the day after the departure of this messenger [a], (consequently Sept. 29, Boëdromion 19,) a sacrifice was offered by command of Xerxes, in the Acropolis, and the sacred olive, which had been burnt down on the day of the capture, was found to have sprouted out afresh [b]—on the second day too,

* Cleomedes, περὶ Μετεώρων, ii. i. 91. 5. has a statement respecting the mode of communication with Persia, employed by Xerxes in this expedition, which must be believed or disbelieved according as his authority may be considered by the reader competent to vouch for it, or not. Ὁ Πέρσης, ἡνίκα ἐπὶ Ἑλλάδα ἐστράτευε, λέγεται διαστῆσαι ἀνθρώπους ἀπὸ Σούσων μέχρις Ἀθηνῶν ὡς δύνασθαι διὰ φωνῆς δηλοῦσθαι τὰ γινόμενα ὑπ' αὐτοῦ ἐν Ἑλλάδι τοῖς ἐν Πέρσαις, διαδεχομένων τῶν διεστώτων τὰς παρ' ἀλλήλων φωνάς. καὶ ἱστορεῖται ἡ φωνὴ κατὰ τοιαύτην ὑποδοχὴν προϊοῦσα διὰ δύο νυχθημέρων ἀπὸ τῆς Ἑλλάδος εἰς Πέρσας ἀφικνεῖσθαι. If this statement may be depended upon, it will imply that the news of the capture was despatched at the end of the day: consequently about sunset Sept. 27.

[y] Herod. viii. 51.
[z] 51–53.
[a] 54, 55.
[b] Cf. Dionys. Hal. xiv. iv.

it is said, after it was burnt. It was burnt then Sept. 27, and this sacrifice was offered Sept. 29. It is to be observed, that Sept. 29, Boëdromion 19, was the fifth of the feriæ of the mysteries, as September 27, Boëdromion 17, the day of the capture, was the third. Whether this had any thing to do with the sacrifice on it, we cannot undertake to say. Herodotus attributes that to *ἐνθύμιόν τι*, which had occurred to Xerxes [c]. It might have been produced partly by this coincidence of the mystical season, and partly by another, which the decursus of the Persian calendar for the year alone brings to light; viz. that Sept. 29, reckoned from sunrise, was the 8th of the current month, the month called Murdâd-mah, and consequently the second of the Persian sabbaths in that month; for there were four such sabbath days in every month, the 1st. the 8th, the 15th, and the 23rd.

Section IX.—*On the date of the Battle of Salamis resulting from the above premises.*

The news of the occupation of Athens, and of the capture of the citadel, would reach the Greeks at Salamis no doubt Sept. 27, Boëdromion 17 [d]. The night therefore, alluded to in the account of their first deliberations after they heard of the latter event [e], must have been that of Sept. 27: and the next morning [f], when the earthquake occurred, *ἅμα τῷ ἡλίῳ ἀνιόντι*, that of Sept. 28, Boëdromion 18. The mention of the mystical Iacchus follows here in Herodotus [g], but evidently proleptically, and because of its connection, as another significant prognostic, with this coincidence of the earthquake. It is agreed upon all hands, (all our later authorities at least are unanimous,) that this particular phenomenon belonged to the day and morning of the battle.

After these deliberations on the night of Sept. 27, the resolution come to, to remain at Salamis and to encounter the Persians there, continued unbroken for the whole of the next day, Sept. 28, Boëdromion 18. But the day after, as it appears from the context [h], the day before the battle itself,

[c] viii. 54, 55. [d] viii. 54. 56. 61. [e] 56. [f] 64. [g] 65. [h] 66–70.

consequently Sept. 29, Boëdromion 19, the Persian fleet arrived from Eubœa[i]: and though the day of this arrival is certainly fixed by the context to the day before the battle, yet the account which Herodotus gives of their movements previously, requires some consideration, in order to reconcile it with that date.

This account is resumed apparently with the return of the fleet to Histiæa after the visit to Thermopylæ[k]. The date of that return was Sept. 12, Boëdromion 1. But he says here[l], Οἱ δὲ ἐς τὸν Ξέρξεω ναυτικὸν στρατὸν ταχθέντες, ἐπειδὴ ἐκ Τρηχῖνος θεησάμενοι τὸ τρῶμα τὸ Λακωνικὸν διέβησαν ἐς τὴν Ἱστιαίην, ἐπισχόντες ἡμέρας τρεῖς, ἔπλωον δι' Εὐρίπου, καὶ ἐν ἑτέρῃσι τρισὶ ἡμέρῃσι ἐγένοντο ἐν Φαλήρῳ. The last of these statements is probably correct. With regard to the former; if we date the arrival in the Phalerus Sept. 29, we must date the beginning of the voyage through the Euripus, Sept. 27. The last of the three days then, for which they waited, must have been Sept. 26: and that having been the day of the actual arrival of Xerxes at Athens, we may infer from this coincidence, that the fleet waited three days before they set out to sail through the Euripus, in order that they might not get to Athens before Xerxes and the army. These three days, reckoned back in like manner from Sept. 26, must have borne date Sept. 24; the day after Xerxes' arrival on the borders of Attica, Sept. 23. The truth then seems to have been *this:* The absolute interval of time between the return to Histiæa and the beginning of the voyage through the Euripus was not intended by Herodotus, in this account of the beginning of the movements of the fleet, before its arrival in the Phalerus. His ἐπισχόντες ἡμέρας τρεῖς must be understood relatively to the arrival of the army on the frontiers of Attica, Sept. 23: i. e. that the fleet waited three days at Histiæa even after that. By these means all will be rendered consistent. The fleet set out as soon as it could reckon with certainty on finding the army at Athens when it arrived there itself; and it arrived three days after the army.

It appears clearly from Herodotus' next accounts[m], that immediately after this arrival Xerxes held the council in which

[i] 66. [k] viii. 23, 24, 25. [l] 66. [m] 66–70.

it was determined to give battle. But that it could not have been held, at least could not have been over, much before the *end* of the day is plain, from what is next observed[n]: Τότε μέν νυν οὐκ ἐξέχρησέ σφι ἡ ἡμέρη ναυμαχίην ποιέεσθαι· νὺξ γὰρ ἐπεγένετο. οἱ δὲ παρεσκευάζοντο ἐς τὴν ὑστεραίην. And this is a great confirmation of all our dates as yet: for this note of time clearly belongs to Boëdromion 20 *ineunte,* Sept. 29, just before or just after sunset; the eve of Salamis.

The arrival of the Persian fleet however on this day, Sept. 29, shook the resolution which the Greeks had come to the day before, and revived the disputes among them[o], whether to stay at Salamis or remove to the Isthmus[p]. And now it was (i. e. on the evening of this day, Sept. 29, Boëdromion 20 *ineunte*) that Themistocles (having no alternative but that of forcing them to stay whether they would or not) must have sent Sikinnus, the παιδαγωγὸς of his children, to Xerxes[q]. And that *he* must have been sent either late in the day or early in the night, is proved by the testimony of Æschylus, as we shall see by and by, and may be inferred from Herodotus' account of what ensued upon it[r]; shewing that even after this communication, there was time left the same day both to land a force on the island of Psyttalea, and to dispose the whole of the fleet across the bay of Salamis, in order to intercept the escape of the Greeks. The consultation of the Greeks meanwhile, and their disputes among themselves, beginning at the close of one day, lasted until break of day on the next[s]. The Persians too were busy and stirring all the night[r].

SECTION X.—*On the testimony of Æschylus to the circumstances of the Battle; and on the inference deducible from it of the Lunar Character of the date of Salamis.*

The contemporary testimony of Æschylus comes in at this juncture to illustrate and confirm the accounts of Herodotus. It is well known that he lived and acted in these times: that he lost an arm in the battle of Marathon, and was present at that of Salamis, and that his brother, Ameinias, distinguished himself in this very battle above all the Athenians. We

n viii. 70. o viii. 74. p 57–64.
q 75. cf. Thucydides, i. 137: Plutarch, Themistocles, xii.
r 76–83. s 78–83.

refer to his testimony, (contained in his play of the Persæ,) for the purpose of shewing how critically the age of the moon, as it is actually to be collected from his account of the circumstances before and after the battle, agrees with that which is necessarily implied in the calendar date of the battle itself, Boëdromion 20, at this distance of time from the epoch[t]—

> *Ἦρξεν μὲν ὦ δέσποινα τοῦ παντὸς κακοῦ*
> *φανεὶς ἀλάστωρ ἢ κακὸς δαίμων ποθέν.*
> *ἀνὴρ γὰρ Ἕλλην ἐξ Ἀθηναίων στρατοῦ*
> *ἐλθὼν ἔλεξε παιδὶ σῷ Ξέρξῃ τάδε·*
> *Ὡς εἰ μελαίνης νυκτὸς ἵξεται κνέφας*
> *Ἕλληνες οὐ μένοιεν ... ...*
> *... ... ... ἄλλος ἄλλοσε*
> *δρασμῷ κρυφαίῳ βίοτον ἐκσωσοίατο.*
> *ὁ δ' εὐθὺς ὡς ἤκουσεν ... ...*
> *πᾶσιν προφωνεῖ τόνδε ναυάρχοις λόγον,*
> *εὖτ' ἂν φλέγων ἀκτῖσιν ἥλιος χθόνα*
> *λήξῃ, κνέφας δὲ τέμενος αἰθέρος λάβῃ,*
> *τάξαι νεῶν στῖφος μὲν ἐν στίχοις τρισὶν*
> *κ', τ. λ. ... ...*
> *ἐπεὶ δὲ φέγγος ἡλίου κατέφθιτο,*
> *καὶ νὺξ ἐπῄει, πᾶς ἀνὴρ κώπης ἄναξ*
> *κ', τ. λ. ... ...*
> *καὶ πάννυχοι δὴ διάπλοον καθίστασαν*
> *νηῶν ἄνακτες πάντα ναυτικὸν λεών·*
> *καὶ νὺξ ἐχώρει, κοὐ μάλ' Ἑλλήνων στρατὸς*
> *κρυφαῖον ἔκπλουν οὐδαμῇ καθίστατο.*
> *ἐπεί γε μέντοι λευκόπωλος ἡμέρα*
> *πᾶσαν κατέσχε γαῖαν εὐφεγγὴς ἰδεῖν,*
> *κ', τ. λ.*

The absence here of all allusion to the moon is remarkable, if we consider that, in a calendar true to the moon, the eve of the 20th of the month must have been only four or five days past the full, and there must have been light from some time more or less before midnight, for the rest of the night. Even then had the actual relation of the calendar to the moon at the time been unknown, we must have inferred from this description, that the night before the battle of Salamis was *ἀσέληνος* throughout. But when it is known that the calendar was now lunar, in the sense of Octaëteric, and the time itself was the 113th year of the decursus of the

[t] v. 353 et seqq.

Octaëteric Period, when the true mean new moons were necessarily falling on the 22nd of the month; it ceases to be surprising that on the eve of the twentieth, only two days before the change, there should have been no such thing as moonlight—nor consequently, in any contemporary description of the circumstances of that night, any allusion to the moon. We look upon this testimony of Æschylus' therefore as a great confirmation of the traditionary date of the battle, and of its agreement with the same date according to our Attic calendar; and we shall proceed to confirm it by another coincidence, which is even more complete and decisive.

Section XI.—*On the fact of a Solar eclipse two days after the Battle of Salamis.*

It is implied by Herodotus[v] that at the end of this day (the day before the battle), September 29, Boëdromion 19 *exeunte*, or 20 *ineunte*, a detachment from the Persian army must have been ordered in the direction of the Peloponnese: *Τῶν δὲ βαρβάρων ὁ πεζὸς ὑπὸ τὴν παρεοῦσαν νύκτα ἐπορεύετο ἐπὶ τὴν Πελοπόννησον.* This movement would take them towards Eleusis and the Campus Thriasius, 13 Roman miles direct from Athens. It was in the Campus Thriasius that the phenomenon of the mystic Iacchus was observed by Dikæus the Athenian and Demaratus the Spartan[x]; and at a time when the Attic territory, evacuated by the Athenians, was in the act of being laid waste by the invaders.

The actual time of this apparition, according to tradition[y], was the beginning of the battle, or even before the battle had begun: and as that did not begin in the morning, but at a time, purposely waited for by Themistocles[z], when a brisk wind from the sea (i. e. the south or south-east) usually set in, it may be fairly presumed the day must have been somewhat advanced before it actually began. It is possible then, that a part of the Persian army, including Dikæus and Demaratus, the former of whom would be wanted as a guide, might have got a day's march from the main body, and as far as the Campus Thriasius, by the same time of the day: and if the Ἴακχος was actually seen just at this time and in this

v viii. 71.
x 66.
y Plutarch, Themistocles, xv.
z Ibid. xiv.

locality (which Pausanias tells us[a] was over against Salamis), even Herodotus' account of its appearance, rightly understood and referred to its proper time and place, will be in unison with that of all our later authorities *.

Now it was observed by him[b] that the wall across the Isthmus had been completed long before this time[c]. The commander at the Isthmus was Cleombrotus; and it appears from a subsequent notice[d] relating to his death, and his being

* Hesychius: *Ἴακχον· τὸν Διόνυσον, ἢ μίαν ἡμέραν τῶν μυστηρίων, ἐν ᾗ τὸν Ἴακχον ἐξάγουσι*—Photii Lexicon, *Ἴακχος . . . καὶ ἡ ἡμέρα καθ' ἣν εἰς αὐτὸν (Διόνυσον ἐπὶ τῷ μαστῷ) ἡ πανήγυρις. ἔνιοι δὲ θόρυβος*: cf. Suidas, *Ἴακχος*—*Μία τῶν μυστηρίων ἐστὶν ἡ εἰκὰς ἐν ᾗ τὸν Ἴακχον ἐξάγουσι* [1]—*Εἰκάδι γὰρ ἡ φρουρὰ Βοηδρομιῶνος εἰσήχθη μυστηρίων ὄντων, ᾗ τὸν Ἴακχον ἐξ ἄστεος Ἐλευσῖνάδε πέμπουσιν· ὥστε τῆς τελετῆς συγχυθείσης ἀναλογίζεσθαι τοὺς πολλοὺς καὶ τὰ πρεσβύτερα τῶν θείων καὶ τὰ πρόσφατα. πάλαι μὲν γὰρ ἐν τοῖς ἀρίστοις εὐτυχήμασι τὰς μυστικὰς ὄψεις καὶ φωνὰς παραγενέσθαι, σὺν ἐκπλήξει καὶ θάμβει τῶν πολεμίων* [2] *κ', τ. λ.*—*Τὰ γάρ τοι μυστήρια Βοηδρομιῶνος ἦν. περὶ εἰκάδα γὰρ τοῦ Βοηδρομιῶνος ὁ μυστικὸς Ἴακχος ἐξήγετο, ὡς καὶ Πλούταρχος ἱστορεῖ* [3].

When then this phenomenon is said to have appeared on the morning of the battle of Salamis; that fact alone is sufficient to fix the date of the battle. It must have been the 20th of Boëdromion. But it was no more necessary to specify the calendar day of the *Ἴακχος* than the calendar month of the mysteries: to do which Theophrastus makes one of the notes of his *Ἀδόλεσχος* [4]: *Καὶ ὡς Βοηδρομιῶνος μέν ἐστι τὰ μυστήρια κ', τ. λ.*

The first of the ancients who authenticates this date and in this manner, by a reference simply to the phenomenon itself, next to Herodotus, is Xenophon; in his Symposium, speaking of Callias: *Εὐπατρίδης εἶ, ἱερεὺς θεῶν τῶν ἀπ' Ἐρεχθέως, οἳ καὶ ἐπὶ τὸν βάρβαρον σὺν Ἰάκχῳ ἐστράτευσαν* [5]. cf. Plutarch; *Ἐν δὲ Σαλαμῖνι περὶ τὰς εἰκάδας, ὡς ἡμῖν ἐν τῷ περὶ ἡμερῶν ἀποδέδεικται*—that is, *Περὶ αὐτὴν τὴν εἰκάδα τοῦ Βοηδρομιῶνος ᾗ τὸν μυστικὸν Ἴακχον ἐξάγουσι* [6]—Polyænus: *Οὕτω γέ τοι καὶ Θεμιστοκλῆς τοῖς Πέρσαις ἐναυμάχησε περὶ Σαλαμῖνα. ἀλλ' οἱ μὲν περὶ Θεμιστοκλέα σύμμαχον ἔσχον τὸν Ἴακχον, οἱ δὲ περὶ Χαβρίαν τὴν ἅλαδε μύσται* [7] (ita leg.) the second day of the mysteries—Aristides: *Καὶ ὁ μὲν Ἴακχος ἐξεφοίτησε καὶ μετέσχε τῶν δρωμένων* [8]—*Μόνος γὰρ τῶν ἱερῶν φασμάτων ἐξεφοίτησεν ἐν τῷ κινδύνῳ τῷ Μηδικῷ* [9].

[a] i. xxxv. 2. [b] viii. 71. 72. [c] See supra, page 378. [d] ix. 10.

1 Scholia ad Ranas, 326.
2 Plutarch, Phocion, xxviii. cf. Alkibiades, xxxiv. and Xenophon Hellen. i. iv. 20: ad ann. a. Ch. 407.
3 Gaza, De Mensibus, viii. Uranolog. 298 A–B.
4 Characteres, *Ἀδολεσχία*, xix. 3. § 2.
5 Cap. viii. 40.
6 Camillus, xix. cf. Themistocles, xv.
7 Strategem. iii. xi. Chabrias, 2.
8 xlvi. 282. 19. *Ὑπὲρ τῶν τεττ.*
9 iv. *Διόνυσος*, 51. 1. cf. xiii. 231. 10: xix. 418. 15: liv. 673. 6. 13: Schol. ad xiii. 185. 18: ad xlvi. 648. 13: Schol. ad Nubes, 303.

succeeded by Pausanias, that some time, while still alive and retaining the command, he had conceived the idea of marching against the Persians; but when he was offering sacrifices, as usual, to ascertain whether this design was approved of by the gods, the sun was *dimmed*, or deprived of its brightness, in the sky—in consequence of which he abandoned his intention, and led the army home again: Ἀπῆγε δὲ τὴν στρατιὴν ὁ Κλεόμβροτος ἐκ τοῦ Ἰσθμοῦ διὰ τόδε· θυομένῳ οἱ ἐπὶ τῷ Πέρσῃ ὁ ἥλιος ἀμαυρώθη ἐν τῷ οὐρανῷ.

Now that the wall must have been finished, and the Isthmus itself put into a state of defence, before he would think of leaving it, much more of marching against the Persians, is evident. But the fact of this latter design, and of his actually offering the usual διαβατήρια before setting out, argues that he must have been inspired with a feeling of confidence, which the mere completion of the wall could not have produced; and this is most reasonably to be explained by his having heard of the victory at Salamis, and probably also of the advance of the Persians in the direction of the Isthmus.

Now as the Isthmus was forty-five miles direct from Athens, and the victory itself was not won before the end of the day [c]; the news of the victory, though sent on purpose, could scarcely have reached him before the end of the next day, Boëdromion 21 October 1, or even the morning of the day after, Boëdromion 22 October 2. If then in consequence of this intelligence he actually conceived the idea of a forward movement of his own, and was actually offering sacrifice in order to its execution, when the phenomenon occurred to which the abandonment of the design is attributed—and that phenomenon is resolvable into a partial eclipse of the sun, visible at the Isthmus; it is manifest that we could not expect to find any solar eclipse in the Tables before this day, October 2 Boëdromion 22—but on that day we should expect to find one. And herein is a remarkable coincidence; viz. that the Tables of Pingrè actually shew an eclipse of the sun, October 2 B.C. 480, at 1 p.m. for the meridian of Paris. We have calculated this solar and lunar conjunction from our own Tables, and found that it happened for the meridian of the Isthmus, October 2. 15 16 9 mean time: and the distance

[c] Plutarch, Themistocles, xv. cf. the Persæ of Æschylus, verse 422–428.

of the sun from the node at the same time being only 6° 8′ 14″, there must have been a considerable eclipse somewhere or other, whether at the Isthmus itself or not *.

After two such proofs of the truth of our calendar, for this year, Cycle xv. 1, B. C. 480, as these (one, supplied by the testimony of Æschylus to the total absence of moonlight the night before the battle, the other, by the fact of this solar eclipse on the 22nd of Boëdromion, two days after the battle,) nothing more could reasonably be required; and we might here close our review of the year of Salamis, were there not some things of later occurrence too interesting not to deserve to be noticed, and reduced if possible to their proper dates.

Section XII.—*On the events posterior to the Battle of Salamis; and on the beginning of the retreat of Xerxes.*

From the sequel of the passage of Æschylus quoted supra[f], it might be inferred that the battle was protracted into the night.

> Οἰμωγὴ δ' ὁμοῦ
> κωκύμασιν κατεῖχε πελαγίαν ἅλα,
> ἕως κελαινῆς νυκτὸς ὄμμ' ἀφείλετο. Persæ, 426.

Yet this does not necessarily imply that the contest was going

* Both Aristides (xlvi. 241. 17) and the scholia refer to an eclipse in the year of Salamis; but they evidently mean thereby that of which Herodotus also spoke at the time of the departure from Sardes. This later ecliptic conjunction, calculated from our Tables, was as follows:

		h.	m.	s.	
Mean new moon,	October 2.	21	35	27	m. t. Greenwich.
	—— 2.	23	8	20	m. t. Isthmus.
True new moon,	October 2.	13	14	16	m. t. Greenwich.
	—— 2.	15	16	9	m. t. Isthmus.

And hence, by subtracting one mean lunation from this mean new moon of the month of October, we obtain that of the month of September just before.

			h.	m.	s.	
B. C. 480	Mean new moon,	October 2.	23	8	20	Isthmus.
		—— 29.	12	44	3	
	Mean new moon,	Septemb. 3.	10	24	17	

Metageitnion 22 in the Attic calendar, the same year: so that the mean new moons at this time were falling strictly on the 22d of their proper months.

[f] Page 393.

on till nightfall, only that its effects, the laments and wailings produced by the defeat of the Persians, were still audible while the daylight lasted. The truth on this point seems to have been, (as Plutarch states[g], on the authority of Simonides, himself a contemporary of these events, or only a little later,) that the battle lasted *μέχρι δείλης*, which means until the day was approaching to sunset. There is no reason then why the particulars, related between the termination of the contest and the end of the day[h], should not be supposed to have belonged to it; viz. the sending away of Artemisia to Ephesus[i] before it was yet dark, and the rest of the fleet, as soon as the night set in, in the direction of the Hellespont.

There was no moon at this time, nor is any alluded to. The flight of the Persian fleet therefore would not be discovered before the next morning, Boëdromion 21, Oct. 1. The Greeks might set out in pursuit however that very day; and as they sailed as far as Andrus, without seeing any thing of them, it is manifest they must have got one night's sail in advance of them, Andrus itself not having been more than that distance from Attica. We may therefore date the arrival of the Greek fleet at Andrus, at the latest, Boëdromion 22, Oct. 2, and the consultation among them there, whether to continue the pursuit or return home[k], the same day.

Directly after, we find Themistocles not only recommending the Athenians in particular[l] to abandon the idea of any further pursuit, and to reserve all operations on the Hellespont for the spring, (implying that the season of such operations was now over,) but to bethink themselves of their domestic cares and concerns—such as rebuilding their houses and sowing their fields: *Καί τις οἰκίην τε ἀναπλασάσθω, καὶ σπόρου ἀνακῶς ἐχέτω**, *παντελέως ἀπελάσας τὸν βάρβαρον· ἅμα δὲ*

* This phrase of *ἀνακῶς ἔχειν* (*τινὸς*) occurs again in Herodotus, i. 24. Ἀνακῶς δὲ ἔχειν τῶν πορθμέων—It is explained to mean *ἐπιμελῶς*, *φυλακτικῶς*, or the like. Hesychius, Ἀνακῶς· ἐπιμελῶς, πεφροντισμένως—Anecdota Græca, 391, Ἀνακῶς· φυλακτικῶς . . . . καὶ ἀνακῶς ἔχειν, φροντίζειν—Mœris, Ἀνακῶς· Ἀττικοί· ὡς Πλάτων ὁ κωμικὸς,

Καὶ τὰς θύρας ἀνακῶς ἔχειν—

[g] Themistocles, xv. [h] viii. 96–108. [i] 107.
[k] viii. 108–110. [l] 109.

τῷ ἔαρι καταπλέωμεν ἐπὶ Ἑλλησπόντου καὶ Ἰωνίης. It follows, that seed time was at hand just after the battle of Salamis, yet not so near but that there might be still a month's interval before it, if houses were to be rebuilt and families resettled meanwhile. And seed time, as we have seen[m], in the agricultural calendar of the Greeks, is always to be understood of the πλειάδων δύσις—which Meton, 50 years after these times, dated Nov. 10, Democritus, sometime before Meton, October 30, and which at this epoch was really to be dated Nov. 4 or 5. This too is a striking coincidence, and another confirmation of the chronology of the preceding events, obtained from our calendar. The oracle of the Delphian Apollo had fixed the decision of the approaching contest, by some such victory as Salamis, to seed time or reaping time, in the natural year; and the event would thus imply that seed time was really intended.

> Ὦ θείη Σαλαμὶς, ἀπολεῖς δὲ σὺ τέκνα γυναικῶν
> ἤ που σκιδναμένης Δημήτερος ἢ συνιούσης[n].

The Grecian fleet remained at Andros, and Themistocles again sent Sikinnus to Xerxes, while they were still there, with his well known message relating to the bridge[o], which Diodorus supposes to have been sent even on the day of Salamis[p]. But it was most probably sent October 2, Boëdromion 22; and though we do not know how soon after it was followed by the retreat of Xerxes, it would doubtless accelerate it; and Æschylus would imply that the interval between the battle and the retreat must have been so short that the latter might almost have taken place the same day.

> Ξέρξης δ' ἀνῴμωξεν κακῶν ὁρῶν βάθος·
> ἕδραν γὰρ εἶχε παντὸς εὐαγῆ στρατοῦ,
> ὑψηλὸν ὄχθον ἄγχι πελαγίας ἁλός *·

ἀντὶ τοῦ ἀσφαλῶς ἢ φυλακτικῶς—Etym. M. Ἀνακῶς . . . ἀπὸ τῶν ἀνάκτων, οἷς φροντίδες εἰσὶ τῶν ὑπηκόων—Suidas, Ἀνακῶς παρὰ Ἡροδότῳ· ἀντὶ τοῦ ἐπιμελῶς—Plutarch, Theseus, xxxiii. Ἀνακῶς γὰρ ἔχειν φάμεν τοὺς ἐπιμελομένους ἢ φυλάττοντας ὁτιοῦν—Thucydides, viii. 102. Προειρημένης φυλακῆς τῷ φιλίῳ ἐπίπλῳ, ὅπως αὐτῶν ἀνακῶς ἕξουσιν ἢν ἐκπλέωσι: i.e. as the Scholiast explains it, προνοητικῶς καὶ φυλακτικῶς—to be on the look out for the Athenians, the better to provide for the approach of their friends.

* He has not noticed here the silver footed chair, on which Xerxes actually sate during the action, and which fell into the hands of the Athenians,

m Supra, p. 144 sqq. n vii. 141. o viii. 110. cf. Thucyd. i. 137. p xi. 19.

ῥήξας δὲ πέπλους κἀνακωκύσας λιγὺ,
πεζῷ παραγγείλας ἄφαρ στρατεύματι
ἵησ' ἀκόσμῳ ξὺν φυγῇ [q], κ', τ. λ.

Herodotus too supposes him to have remained on the spot only a *few days* after the battle. We may assume then that he began his retreat the day after he probably received the message of Themistocles, Oct. 4, Boëdromion 24. Mardonius accompanied him as far as Thessaly: Ἔδοξε γὰρ Μαρδονίῳ, ἅμα μὲν προπέμψαι βασιλῆα, ἅμα δὲ ἀνωρίην εἶναι τοῦ ἔτεος πολεμέειν· χειμερίσαι δὲ ἄμεινον εἶναι ἐν Θεσσαλίῃ, καὶ ἔπειτα ἅμα τῷ ἔαρι πειρᾶσθαι τῆς Πελοποννήσου [r]. By Oct. 4, the fifth or sixth day after the autumnal equinox, the military season would be considered to be over.

SECTION XIII.—*On the march back to the Hellespont.*

This march was briefly considered supra [s]. The total distance from Athens to the Strymon, direct, and exclusive of the angle between the Axius and the Strymon *, being 303 miles, at the rate of nine miles a day it would take up 34 days, and Xerxes would reach the Strymon 34 days after October 4, i. e. Nov. 7.

The march itself is thus described [t]: Ὅκου δὲ πορευόμενοι γινοίατο, καὶ κατ' οὕστινας ἀνθρώπους, τὸν τουτέων καρπὸν ἁρπάζοντες ἐσιτέοντο. εἰ δὲ καρπὸν μηδένα εὕροιεν, οἱ δὲ τὴν ποίην τὴν ἐκ τῆς γῆς ἀναφυομένην, καὶ τῶν δενδρέων τὸν φλοιὸν περιλέποντες, καὶ τὰ φύλλα καταδρέποντες κατήσθιον, ὁμοίως τῶν τε ἡμέρων καὶ

and was dedicated in the Parthenon. Cf. Demosthenes, contra Timocraten, xxiv. 148. Harpocration, Ἀργυρόπους δίφρος· ὁ Ξέρξου, ὃς αἰχμάλωτος ἐπεκαλεῖτο, ἐφ' οὗ καθεζόμενος ἐθεώρει τὴν ναυμαχίαν· ἀνέκειτο δὲ εἰς τὸν Παρθενῶνα τῆς Ἀθηνᾶς. Cf. Suidas, Ἀργυρόπεζα.

* It might indeed be inferred from viii. 126. that Xerxes took the same course in returning as in coming, and no doubt he did so in general. But that the angle in question must have been avoided in returning, may be rendered highly probable as follows. The distance from Thermopylæ to the Hellespont direct, inclusive of that angle, was 461 Roman miles, exclusive, was 393: and this latter, divided by nine, gives the length of the retreat, 44 days, almost the same at which Herodotus states it, 45 days; the former, divided by nine, would make it 50 days long at least.

q Persæ, 465.
r viii. 113. cf. Thucyd. i. 73.
s Page 369.
t viii. 115.

τῶν ἀγρίων, καὶ ἔλιπον οὐδέν. By the *καρπὸς* here we must necessarily understand, in some instances, the vintage—which might still be found going on in various parts of the route, between the beginning of October and the beginning of November; and, in other instances, the olive gathering, the proper season of which would be the month of November itself*. The leaves too for more or less of the interval would

* *Εἴ τοι Ἀθηναίης*[1] *πέλει ἔρνεα, ὥριον ἤδη*
*καρπὸν ἀποθλίβειν * μνῆστιν ἔχειν καμάτων*[2].

Venit hiems, teritur Sicyonia bacca trapetis[3].

Sed tamen et quernas glandes tum stringere tempus,
Et lauri baccas, oleamque, cruentaque myrta[4].

Non poma autumnus, segetes non educat æstas,
Canaque Palladio munere bruma caret[5].

Ὡς δ' ὁπότ' αἰζηῶν τις ἀγρῷ ἔνι τηλεθάοντι
πᾶν ἦμαρ κρατερῇσι πονησάμενος παλάμῃσιν
ἐς γαῖαν κατέχευεν ἀπείρονα καρπὸν ἐλαίης,
ῥάβδῳ ἐπισπέρχων, ἐκάλυψε δὲ χῶρον ὕπερθεν·
ὣς τοῦ ὑπαὶ παλάμῃσι κατήριπε πουλὺς ὅμιλος[6].

Ὡς δ' ὁπότε βριαρῷ ὑπὸ χείματι καρπὸς ἐλαίης
οὔπω χειμερίῃσι μελαινόμενος ψεκάδεσσι
χεύῃ πολλὸν ἄλειφα, περιτρύζωσι δὲ μακρὰ
ἄρμεν' ὑπὸ σπάρτοισι βιαζομένων αἰζηῶν[7].

An inscription is extant in the Corpus Inscript.[8] which proves that in a certain year, B. C. 345, Eubulus, (next after Archias, B. C. 346,) the olive gathering in Attica was expected to be over by seed time at least. Augetur oleum ad Arcturi exortum, a. d. xvi. Kal. Octobres (Sept. 16, Roman): postea nuclei increscunt et caro[9]: an observation taken from Theophrastus[10]—Item vindemia facta (at the latest by the setting of the Pleiads, Nov. 11, Roman) olivam esse rapiendam, et quæ ad oleum pertinent, quæque ad Vergiliarum occasum agi debent[11]—Hunc (Notum scilicet) oliveti metator, Vergiliarum quatriduo, (Nov. 11–14, Roman,) hunc caveat insitor[12]. According to Cato, the olive might be expected

* Corr. *ἀποθλίβων*.

1 Anthologia, iii. 219. *Μῆνες Ῥωμαίων.* November.
2 Cf. iv. 99. Leontis Philosophi vii.
3 Georgica, ii. 519.
4 Ibid. i. 305. De hieme.
5 Seneca, iv. 558. Super Exsilio, ii. 3. De Corsica.
6 Quintus Smyrnæus, ix. 198.
7 Ibid. xiv. 263.
8 No. 93.
9 Pliny, H. N. xv. 3. 145.
10 De Causis Pl. i. 19. 376. 5: vi. 18. ad princip.
11 H. N. xviii. 74. 265.
12 H. N. xviii. 76. 270.

be still on the trees, and might serve as a means of subsistence when every other had failed. The season of the *φυλλορροία* was not dated by the ancients earlier than the cosmical setting of the Pleiads or Orion; i.e. the earliest beginning of winter*. Leaves would be found still hanging all through the month of November.

The most important testimony however to the circumstances of the retreat, as far as the Strymon at least, is that of Æschylus: and though it extends to a great length, we shall perhaps be excused if we quote it entire[x].

> *Ναῶν γε ταγοὶ τῶν λελειμμένων σύδην*
> *κατ' οὖρον οὐκ εὔκοσμον αἱροῦνται φυγήν.*
> *στρατὸς δ' ὁ λοιπὸς ἔν τε Βοιωτῶν χθονὶ*
> *διώλλυθ', οἱ μὲν ἀμφὶ Κρηναῖον γάνος*
> *δίψῃ πονοῦντες, οἱ δ' ὑπ' ἄσθματος κενοὶ*
> *διεκπερῶμεν ἔς τε Φωκέων χθόνα*
> *καὶ Δωρίδ' αἶαν Μηλιᾶ τε κόλπον, οὗ*
> *Σπερχειὸς ἄρδει πεδίον εὐμενεῖ ποτῷ.*
> *κἀντεῦθεν ἡμᾶς γῆς Ἀχαΐδος πέδον*
> *καὶ Θεσσαλῶν πόλισμ' ὑπεσπανισμένους*
> *βορᾶς ἐδέξαντ'· ἔνθα δὴ πλεῖστοι θάνον*

to be ready by Nov. 1.[13]: and when the weather might be frosty: Si gelicidia erunt cum oleam coges, &c.[14] By Columella, the olive gathering and the confectio olei is dated in the latter half of December, between the Ides, and the Kalends of January[15]. So also in the old Rustic Calendar[16]; before the Saturnalia, Dec. 17, Roman, olivam legent. Yet he implies also[17] that preparations might begin to be made for it in the latter half of November. Sequitur . . . frigus hiemis, per quod olivitas, sicut vindemia, curam villicæ reposcit[18]—Media est olivitas plerumque initium mensis Decembris: nam et ante hoc tempus acerbum oleum conficitur quod vocatur æstivum, et circa hunc mensem viride[19] premitur, deinde postea muturum[20]—Post mensem Decembrem circa Kalendas Januarias eadem ratione qua superius distringenda erit olea, et statim exprimenda[21].

* Thus in the calendar of Democritus, apud Geminum, Scorpion 4, October 30, his date of the cosmical setting of the Pleiads; *φυλλοροεῖν ἄρχεται τὰ δένδρα μάλιστα.*

x Persæ, 480, sqq.

13 De Re Rustica, cxlvi. See of the date of this Treatise, our Origines Kal. Italicæ, iii. 193. sqq.

14 Ibid. lxv. § 2. p. 70.

15 De Re Rust. xi. 2. § 95.

16 SS. Rust. 854.

17 § 87.

18 xii. 48. § 1.

19 Cf. Palladius, xi. x. who calls this oleum viride too, but supposes it made in October, of the olive just beginning to turn. Also the Geoponica, iii. 13. p. 85, 86. the same, in October too: cf. iii. 15. ix. 17.

20 Ibid. 50. § 1.

21 Ibid. § 17.

δίψῃ τε λιμῷ τ'· ἀμφότερα γὰρ ἦν τάδε.
Μαγνητικὴν δὲ γαῖαν ἠδὲ Μακεδόνων
χώραν ἀφικόμεσθ' ἐπ' Ἀξίου πόρον,
Βόλβης θ' ἕλειον δόνακα, Παγγαῖόν τ' ὄρος
Ἠδωνίδ' αἶαν· νυκτὶ δ' ἐν ταύτῃ θεὸς
χειμῶν' ἄωρον ὦρσε, πήγνυσιν δὲ πᾶν
ῥέεθρον ἁγνοῦ Στρυμόνος· θεοὺς δέ τις
τὸ πρὶν νομίζων οὐδαμοῦ, τότ' ηὔχετο
λιταῖσι, γαῖαν οὐρανόν τε προσκυνῶν.
ἐπεὶ δὲ πολλὰ θεοκλυτῶν ἐπαύσατο
στρατὸς, περᾷ κρυσταλλοπῆγα διὰ πόρον·
χὤστις μὲν ἡμῶν, πρὶν σκεδασθῆναι θεοῦ
ἀκτῖνας, ὡρμήθη, σεσωσμένος κυρεῖ.
φλέγων γὰρ αὐγαῖς λαμπρὸς ἡλίου κύκλος
μέσον πόρον διῆκε, θερμαίνων φλογί·
πίπτον δ' ἐπ' ἀλλήλοισιν· εὐτυχὴς δέ τοι
ὅστις τάχιστα πνεῦμ' ἀπέρρηξεν βίου.
ὅσοι δὲ λοιποὶ κἄτυχον σωτηρίας,
Θρῄκην περάσαντες[y] *μόγις πολλῷ πόνῳ,*
ἥκουσιν ἐκφυγόντες, οὐ πολλοί τινες,
ἐφ' ἑστιοῦχον γαῖαν κ', τ. λ.

If the fact here asserted of the frost which bridged the Strymon may be depended on; it is a striking confirmation of our dates. For it must have set in on the night of November 7; and the moon, having been new November 1, would be six days old November 7: at which time the weather might be most severe.

The passage of the Strymon then may be dated November 8, Pyanepsion 29. The rest of the march, 191 miles direct, to the Hellespont, would take up 20 days: and Xerxes might arrive there November 28, Mæmacterion 19. He found the bridge destroyed, *ὑπὸ χειμῶνος*[z]; i. e. by a storm; or as Justin expresses it[a], hybernis tempestatibus: yet it was still entire, October 2 or 3, when the Greeks arrived at Andrus[b]. It had therefore been destroyed meanwhile; and meanwhile also the *πλειάδων δύσις*—the season most notorious for storms in the whole year—had occurred. The arrival of Xerxes, after this, with the wreck of his army, at Sardes, does not concern our present purpose: but as the distance was 160 miles and upwards, it may probably be dated December 17

[y] Cf. verse 563–567.
[z] viii. 117.
[a] ii. 13.
[b] Herod. viii. 108-110.

or 18. His return to Sardes, after he reached the Asiatic side of the Hellespont, was mentioned by Ctesias [c].

SECTION XIV.—*On the Siege of Potidæa by Artabazus.*

An escort of 60,000 soldiers was detached by Mardonius, under Artabazus, to accompany Xerxes as far as the Hellespont [d]; and as these were returning they laid siege to Potidæa, on the isthmus of Pallene. Artabazus would not reach the Hellespont before November 28; nor be at liberty to retrace his steps under some few days afterwards. The distance from that quarter to Potidæa direct was 240 Roman miles; at the rate of nine miles a day, 26 or 27 days' march; at the rate of 11 or 12, 20 or 22. And since it appears that before he sat down to the siege he had previously reduced Olynthus [e], we may assume that he could not have sat down before the place till the end of December, B. C. 480, or the beginning of January, B. C. 479: when Mardonius, it is said, was wintering in Thessaly and Macedonia; as no doubt he must have been.

The siege had lasted three months—and (as it is strongly implied in the context) three *complete*—when it was broken up, by a remarkable accident, which occasioned the Persians an unexpected loss; an extraordinary πλημμυρὶς following on an equally extraordinary ἄμπωτις [ee]: and this could have been nothing but the flood, which followed on the ebb, of a spring tide, of more than usual magnitude. And such tides being most usual at the equinoxes, and this siege of Potidæa, begun about the beginning of January, having lasted three months before this tide occurred, it is clear it must have set in about the end of March—and consequently very near the vernal equinox, which B. C 479 was actually falling on March 27.

To put this to the test, we have calculated the new moon of March, B. C. 479, for the meridian of Potidæa; and found that it actually fell March 29, about 14 h. 56 m. 11 s. m. t. *,

* B. C. 479.		h.	m.	s.	
Mean new moon	March 29	1	59	49	m. t. Greenwich.
	March 29	3	34	3	m. t. Potidæa.
True new moon	March 29	13	21	57	m. t. Greenwich.
	March 29	14	56	11	m. t. Potidæa.

[c] Persica, 27. [d] Herod. viii. 126. [e] 126, 127. [ee] viii. 129.

only two days later than the equinox: which we think is a strong confirmation of our conjecture respecting the physical cause of the phenomenon which broke up the siege of Potidæa. March 29 B. C. 479 in the Attic calendar coincided with Elaphebolion 22, Cycle xv. 2: from which, if we reckon back three lunar months, we get to Posideon 22, Cycle xv. 1, Dec. 30 B. C. 480: so that if the siege began at the very beginning of January B. C. 479, Herodotus' statement would be strictly true, that it had lasted three months, and three complete, when it was thus brought to an end.

Artabazus after this misfortune made the best of his way to Mardonius in Thessaly; though where in Thessaly he joined him does not appear. It would however be 130 miles and upwards direct from Potidæa to Pharsalus in Thessaly, and 200 to Thermopylæ; not less than 11 or 12 days, and possibly as many as 16 or 17, days' march. On the whole, he probably could not rejoin him long before April 19 B. C. 479. And thus by a singular coincidence, as our review of the chronology of these events set out from April 19 B. C. 480, so it would close with coming round to the same day, B. C. 479.

CHAPTER III.

On the date of the Battles of Platæa and Mycale.

SECTION I.—*Civil or Calendar date of the Battle of Platæa.*

Attic Calendar, Period i. 114, *Cycle* xv. 2. *B. C.* 479.

Month.	Days.	Midn.	Month.	Days.	Midn.
i. Gamelion	29	.. January 8	vii. Hecatombæon	29	.. July 4
ii. Anthesterion	30	.. February 6	viii. Metageitnion	30	.. August 2
iii. Elaphebolion	29	.. March 8	ix. Boëdromion	29	.. Sept. 1
iv. Munychion	30	.. April 6	x. Pyanepsion	30	.. Sept. 30
v. Thargelion	29	.. May 6	xi. Mæmacterion	29	.. October 30
vi. Skirrhophorion	30	.. June 4	xii. Posideon	30	.. Novemb. 28

The only authority who has recorded the date of Platæa is Plutarch; and even Plutarch on this point is not consistent with himself. In his Life of Camillus[f] he dates it on the third of Boëdromion; in his Life of Aristides[g] on the fourth. But the former date is confirmed by the treatise De Gloria[h]; Τρίτῃ δ' ἱσταμένου (Βοηδρομιῶνος scil.) τὴν ἐν Πλαταιαῖς μάχην ἐνίκων. We do not hesitate therefore to consider this the true date, handed down to the time of Plutarch, in the Attic calendar in the style of Boëdromion 3, and, as we shall see by and by, in the Bœotian in that of Panemus 27.

The year of Salamis having been B. C. 480, that of Platæa must have been B. C. 479[i]. This year corresponded to Period i. 114, Cycle xv. 2 of the Attic correction of Solon; in which (as appears from the scheme proposed) the first of Gamelion bearing date Jan. 8 at midnight, the first of Boëdromion bore date Sept. 1 at midnight, and the third, Sept. 2 at midnight. This must consequently have been the Julian date of the battle. We propose to confirm it by instituting the same kind of review of the course of circumstances before and after this battle, as we did of the events before and after that of Salamis: beginning however with the occupation of Athens by Mardonius, and its proper date.

Section II.—*On the date of the occupation of Athens by Mardonius.*

The particulars related by Herodotus[k], between the end of the preceding year and this second occupation of Athens, refer partly to the proceedings of Mardonius, partly to those of the allied fleet; some of them in the winter of the past year, the rest in the spring of this. The former might have been going on before the return of Artabazus; but most of these events in all probability were posterior to it: and consequently (if the conclusion we have just come to respecting its probable date is correct) not earlier than April 19 B. C. 479. The first of these subsequent transactions was the mission of Alexander of Macedon to Athens[l]. From that time to the second occupation there might have been an interval of nearly three months; so that from viii. 129, when Artabazus rejoined Mardonius, circa April 19, down to ix. 1, when Mardonius began his march, not less than two months,

[f] Cap. xix. [g] Cap. xix. [h] Cap. vii. [i] Cf. Pausanias, vi. iii. 4. [k] viii. 130—ix. 3. [l] viii. 130.

though possibly less than three, may be assumed to have elapsed.

The interval between this second occupation by Mardonius, and the former one by Xerxes, is stated by Herodotus at *ten* months[m]: Ἡ δὲ βασιλῆος αἵρεσις ἐς τὴν ὑστέρην τὴν Μαρδονίου ἐπιστρατηΐην δεκάμηνος ἐγένετο. It is more correct, as the context shews, to understand this interval not of the actual occupation of the city by Mardonius, but of his first setting out from Thessaly, after the return of Alexander[n]: and such is the proper signification of the word ἐπιστρατηΐη—not that of an *occupation*, but that of an *invasion*, a *marching against*, for the purpose of *occupation*. We do not indeed know from what part of Thessaly the march was begun: but if it was from any where about the middle of the country, (Pharsalus for instance,) the right line distance from thence to Athens could not have been less than 150 Roman miles; $12\frac{1}{2}$ days' march, at the rate of 12 miles a day.

Now the date of the occupation the year before having been Boëdromion 16 Sept. 26; reckon ten months complete by the calendar from Boëdromion 16 B. C. 480, and you come to Hecatombæon 16 B. C. 479, as the probable date of this second march upon Athens: and reckon on 12 days more, and you come to Hecatombæon 28 July 31, as the probable date of the second arrival and second occupation itself. The Athenians delayed the evacuation of the city until they heard of Mardonius' being in Bœotia[o], which probably meant his having passed through the straits of Thermopylæ: as he might do on the fifth day after he set out, Hecatombæon 20 July 23. And the news of the event, carried by hemerodromi, might easily reach Athens two days after, Hecatombæon 22 July 25; and both the abandonment of the city by the people, and the mission of the ambassadors to Sparta, which are said to have ensued without delay[o], might have taken place the same day, or at the latest the next, Hecatombæon 23 July 26 *.

* It is worthy of observation, that in specifying the interval between the first occupation of Athens by Xerxes, and this second invasion of Attica by Mardonius, it would not be necessary to take any intercalary month into account. The first intercalary year in the current cycle would

[m] ix. 3. [n] ix. 1. [o] Cap. 6.

SECTION III.—*On the date of the mission of the Embassy of the Athenians to Sparta.*

The first event after the occupation of the city, which Herodotus relates [p], is the mission of Murhichides to Salamis; in order to renew to the Athenians there the same proposals which Mardonius had made them not long before, through Alexander of Macedon, in their own city: on which occasion the senator, who alone was found disposed to concede even an hearing to his propositions, was stoned to death by the men, and his wife and children by the women *. The date of this mission, as a later event than the occupation of the city, comes in no doubt in its proper order of time: but what is next related, of the mission of the deputies to Sparta, and of the proceedings there [q], is partly the resumption of what began to be done just before the occupation, and partly the account of what followed upon it.

Now the evacuation of the city having been probably determined to July 25 or 26, and the deputies having been sent to Sparta just when it was taking place; if we may suppose they would travel at the rate of 30 of our miles a-day—the ordinary measure of a day's journey ἀνδρὶ εὐζώνῳ—and there-

be the third, B. C. 478. Herodotus had nothing to do but to count ten months complete from Boëdromion 16, Cycle xv. 1, to Hecatombæon 16, Cycle xv. 2.

Plutarch, De Herodoti Malignitate, xxxi, makes Thebes only one day and an half distant from Thermopylæ. It was more by the maps however than 55 or 60 Roman miles direct; and that would be three days' journey for an ordinary traveller, and one of a day and an half, at the rate of 40 miles a day, ἀνδρὶ εὐζώνῳ only. Mardonius in marching from Thermopylæ to Athens must pass by Thebes. Thermopylæ was 93 miles direct from Athens; not more however than a day and an half for an ἡμεροδρόμος.

* Herodotus calls this individual Lykides: ix. 5. It is singular that in subsequent allusions to him, and his fate, he is commonly styled Κύρσιλος. See Demosthenes, xviii. 259: Lycurgus, § 124. Harpocration, Κύρσιλος; Phot. Lexicon, and Suidas in voce: Himerius, Eclogæ, v. 142. § 17. (cf. Phot. Bibl. Cod. 243): Cicero, De Officiis, iii. 11, 48: Anecdota Græca Oxon. iv. 88. 29: Scholia on Aristides, 591. 27. 34, and Aristides, xiii. 227. 5–9: xlvi. 286, 287: Schol. 177. 24–31. 655. 23.

[p] ix. 4, 5. [q] ix. 6 sqq.

fore accomplish the distance (though assumed at 120 English miles [r]) in *four* days' time, there is no reason why they might not be in Sparta by the end of July 29, and have their first audience of the ephors [s] July 30. That they must have gone by land, appears from their having been accompanied by deputies from Megara and Platæa [s].

SECTION IV.—*On the date of the Hyakinthia at Sparta,* B. C. 479.

At the time of their arrival, Herodotus tells us, the Lacedemonians were keeping one of their national festivals, and this festival that of the Hyakinthia: *Οἱ γὰρ δὴ ... ὥρταζόν τε τοῦτον τὸν χρόνον καί σφι ἦν Ὑακίνθια· περὶ πλείστου δ' ἦγον τὰ τοῦ θεοῦ πορσύνειν* [t]: and this would seem to imply that these holydays had actually begun when the deputies arrived. But after mentioning meanwhile an interval of ten days complete, before which they had as yet received no answer, even on the morning of the next day (the eleventh day since their first audience), Herodotus puts an observation into their mouths which would appear just as necessarily to imply that the same feast, which was going on at their arrival, was still continuing on the eve of their departure [u]: *Ὑμεῖς μὲν ὦ Λακεδαιμόνιοι αὐτοῦ τῇδε μένοντες Ὑακίνθιά τε ἄγετε καὶ παίζετε κ', τ. λ.*

Now if both these statements are to be literally understood, it will follow from them that the Hyakinthia must have been usually celebrated *ten* or *eleven* days at least: but we know from express testimony that they lasted only *three* days. It is certain therefore that this same festival could not have been going on both when the deputies first arrived, and when they were about to take their leave. If so, we have to decide whether the statement at ix. 6, of what was going on when the deputies arrived, is to be understood *proleptically*, of what was actually going on only on the eve of their departure, or that at ix. 11, just before their departure, *retrospectively*, of what had been going on ten or eleven days before.

This latter appears to us on every account the more pro-

[r] See supra, p. 346. [s] ix. 7.
[t] ix. 6. Cf. Plutarch, Aristides, x. [u] ix. 11.

bable construction. It is easy to conceive that if the Athenians found a festival going on at the time of their arrival, and they had been put off ten or eleven days without an answer, while nothing was going on, or had been, to account for this delay, except that festival; when their patience was exhausted, and they were about to return home in disgust, they might reproach the Lacedemonians with minding nothing but amusement, while the salvation of Greece was at stake: and such language, under the circumstances of the case, though strictly applicable only ten days before, would still be natural and excusable. But it is not conceivable that Herodotus, who could not but know that the Hyakinthia lasted only three days—after speaking of them once as going on at a certain time before, would speak of them again as still going on ten or eleven days afterwards.

We conclude then that the Hyakinthia were actually going on when the Athenian deputies arrived at Sparta; but not when they were preparing to leave it again. And herein is the first confirmation of our chronological assumptions, for the present year. The Hyakinthian institution—its dates and its proper rules—is a subject which, if we are permitted to arrive at that period of our present labours, will occupy us on a future opportunity: at present it is sufficient to observe, that they lasted three days; that they were attached to three lunar dates, the sixth, the seventh, and the eighth of the true lunar month; that these dates followed the moon, and consequently were liable to rise in the octaëteric calendar; and at this very time they were falling on the sixth, the seventh, and the eighth of the true mean new moon of Hecatombeus in the Spartan, Hecatombæon in the Attic calendar, but on the 27th, the 28th, and the 29th of the civil month of the same name, Hecatombeus at Sparta, Hecatombæon at Athens also. We have concluded that the Athenian deputies must have been sent July 26, Hecatombæon 23; and must have arrived July 29, Hecatombæon 26: and must have had their first audience of the ephors July 30, Hecatombæon 27. They arrived consequently on the eve of the Hyakinthian festival: and had their audience on the first of the Hyakinthian feriæ. With reason then might Herodotus say this feast was going on when they arrived.

SECTION V.—*On the date of the mission of the Spartan army, and its coincidence with the full of the moon.*

The date then of the first audience of the Athenian ambassadors having thus been determined to Hecatombæon 27, July 30; we are told that the ephors put off their answer from day to day: *Ὡς δὲ ἄρα ἄκουσαν οἱ ἔφοροι ταῦτα ἀνεβάλλοντο ἐς τὴν ὑστεραίην ὑποκρίνασθαι· τῇ δὲ ὑστεραίῃ ἐς τὴν ἑτέρην. τοῦτο καὶ ἐπὶ δέκα ἡμέρας ἐποίεον, ἐξ ἡμέρης ἐς ἡμέρην ἀναβαλλόμενοι*[v]. The first of these ten days would be Hecatombæon 28, July 31; the tenth Metageitnion 8, August 9. On the night of this last day, and in consequence of the advice of Chileas the Tegeate[x], the detachment of 5000 Spartans was despatched. But though the advice or remonstrances of Chileas might have had something to do in determining the ephors to take that step; there would still seem to have been some reason for the previous delay, of which even Herodotus does not appear to have been aware.

As these troops were sent away by night, it may be presumed there was moonlight that same night, and probably all the night. Now, only *eleven* years before this time (B. C. 491), we know from Herodotus himself that it was contrary to the written or the unwritten law of Sparta (to the rule and custom at least) to take the field on a military expedition, howsoever urgent, before the full of the moon: what reason then is there to suppose that the same law or custom, the same scruple and prejudice, was not still in existence and still operative B. C. 479? If so, the true motive to the delay of the ephors, of which the Athenian deputies had apparently so much reason to complain, whether they chose to avow it or not, after all might have been that they were waiting for the full of the moon; that it had not arrived while they were still putting off their answer; that it was arrived when they despatched the reinforcement. If this explanation is the true one, the night of August 9 must have been that of the full moon. Now, the true mean new moons of the calendar at this period of the decursus of the octaëteric cycle were falling on the 22nd of their respective months;

[v] ix. 8. [x] Ib. 9, 10.

and consequently the true mean new moon of Hecatombæon on the 22nd of that month, July 25, and the full moon on the 7th of Metageitnion, August 8, at the earliest—and possibly on the 8th of Metageitnion, August 9. To place this out of doubt we have calculated the true full moon of August B. C. 479, for the meridian of the ancient Sparta; and found that it actually fell on August 9, about 4 h. 23 m. 11 sec. mean time from midnight *.

This then may be regarded as another striking confirmation of our previous dates. The mission of the Spartan auxiliary force is thus determined to the night after the full moon, Metageitnion 9 *ineunte*, August 9: and the last audience of the Athenian deputies, (at which they were informed of that fact,) followed no doubt by their own departure [y] the same day, must have been the next morning (the eleventh since that of their first audience) August 10, Metageitnion 9.

SECTION VI.—*Date of the retreat of Mardonius from Athens.*

All this time Mardonius was still at Athens. The news of the despatch of the Spartans was communicated to him there by the Argives [z]: and as it was sent by one of their fastest hemerodromi, there is no difficulty in supposing it would reach him the next day, August 11—or at the latest August 12. It required only a day and an half to run the whole of the distance from Athens to Sparta, B. C. 491; and Argos was forty English miles direct nearer to Athens than Sparta †.

* B. C. 479.		h.	m.	s.	
Mean full moon,	August 8	22	18	2	m. t. Greenwich.
	August 8	23	47	45	m. t. Sparta.
True full moon,	August 9	2	53	28	m. t. Greenwich.
	August 9	4	23	11	m. t. Sparta.

† The Argives had undertaken to intercept any auxiliary force which might be sent from Sparta. The author of the Epistles ascribed to Themistocles, Epistola xviii. (Themistoclis Epistolæ, Gr. et Lat. Christiani Schaetgenii, Lipsiæ, 1710), addressed to Polygnotus, and supposed to have been written just as he was leaving Argos to escape to Corcyra, represents the messenger, who brought him word of the decree of the

y ix. 9–11. z ix. 12.

On the receipt of this intelligence, for the reasons assigned by Herodotus[a], Mardonius determined to retreat into Bœotia; and there is no reason why he should not be supposed to have done so without delay. We may therefore date the evacuation of Athens Metageitnion 11, August 12. It seems to have been his intention at first to retire towards Dekeleia, *away* from Megara and the Isthmus: but a report, that a body of Lacedæmonians had advanced as far as Megara, having reached him on the road, he *turned back*, as Herodotus expresses it[a], (and it would be really a retrograde movement,) and marched with all, or part of his army, on Megara; up to the suburbs of which his cavalry at least must have advanced[b]. Megara having been 26 or 27 Roman miles direct from Athens*; if he began his retreat Metag. 11, Aug. 12; he might be there Metag. 13, Aug. 14. The Spartans had not by that time arrived at the Isthmus[a]: and if they set out only on the night of August 9, the distance being 84 miles direct, it would require *seven* days, at the rate of 12 miles a day, to bring them to the Isthmus.

After this, having heard that the Greeks were still at the Isthmus, according to Herodotus[c] he again led off his troops to Dekeleia; and that being 26 miles from the borders of the Megarid, he could not arrive there before Metag. 15, Aug. 16. The Spartans might have got to the Isthmus on the sixth day, exclusive of the *night* of their departure, Met. 14, Aug. 15. The news of their arrival might reach Mardonius

Athenians, as having arrived at Argos in less than 24 hours. P. 92: *Τὸν μὲν οὖν ἄγγελον τῆς σπουδῆς καὶ σὺ ἐπαινέσεις· ἀφεθεὶς γὰρ ᾗ τὴν ἐκκλησίαν ἔλυσαν Ἀθηναῖοι οὐ πόρρω τῆς ἑσπέρας ὥς φασιν οὔσης, μετὰ τὴν νύκτα ἐκείνην ἡμέρας ἦν ἐν Ἄργει, μηδὲ μεσημβρίας ἤδη ἐφισταμένης*—and this just before the *χειμὼν* or winter too.

* Such is the distance, according to the measurements of D'Anville. The ancients represent it as about the same. Cf. Xenophon, De Vectigalibus, iv. 46. 43. Procopius, De Bello Vandalico, i. i. 312. 3; *Μιᾶς δὲ ἡμέρας ὁδὸς ἐς δέκα καὶ διηκοσίους διήκει σταδίους, ὅσον Ἀθήνηθεν Μέγαράδε ἰέναι.* Dio Chrys. vi. 200. 45, makes it an easy day's journey from Megara to Athens. Cf. Diogenes Laertius, Euclides, ii. x. 1. 106: A. Gellius, vi. 10, who underrates the distance; representing it at little more than 20 Roman miles.

[a] ix. 13, 14, 15. [b] Cf. Pausanias, i. xl. 2. [c] ix. 15.

on the borders of the Megarid, the same day: and in consequence of it he might resume his retreat without delay. The night *after* (spent at Tanagra [d], 11 miles from Dekeleia) might be that of Aug. 16. The next day, when he took up his quarters at Σκῶλον, in the Theban territory [e], 15 miles from Tanagra, must have been Met. 16, Aug. 17. A few days later, (it is indifferent to our purpose, how few,) the Phocians may be supposed to have joined him there; and what is related as passing between them and him [f], to have followed immediately. We date all these particulars between Met. 16 and 19, Aug. 17 and 20.

The allied forces in the meantime were still assembling at the Isthmus [g]. When they took the field at last, they marched first to Eleusis [g], 34 miles from Gerancia on the Isthmus; and there they were joined by the Athenians. This could not have been before Met. 17, Aug. 18. Finally they arrived at Erythræ under mount Kithæron [h]; and this having been 17 miles direct, a day and an half's march from Eleusis, we may date their arrival about the middle of the day, Met. 19, Aug. 20.

Section VII.—*On the order and dates of the events from the time of the arrival of the Greeks in presence of the Persians, to that of the Battle.*

The encounter with the Persian cavalry, the death of Masistius, and the advance of the Greeks to Platæa, (the next forward movement on their part,) all related consecutively upon the arrival at Erythræ [h]—may be dated on that day; the greater part of which was still left after their arrival: and not only these particulars, but those of the next seven chapters [i], may be comprehended in two days, Met. 19 and 20, Aug. 20 and 21.

The next day—Metag. 21, Aug. 22—is mentioned by name [k]: and in the subsequent chapters [l], though the particulars of each day may not be specified, *six* days must have been included altogether: for up to the time when the advice of Timegenides, about securing the passes of mount Kithæron, was given, *eight* days, it is said, had elapsed in all, since

[d] ix. 15. [e] Ibid. [f] 17, 18. cf. 15, 16. [g] ix. 19. [h] 20–25. [i] 26–32. [k] ix. 33. [l] 34–38.

the armies had been encamped in sight of each other: Ἡμέραι δέ σφι ἀντικατημένοισι ἤδη ἐγεγόνεσαν ὀκτώ, ὅτε ταῦτα ἐκεῖνος συνεβούλευε Μαρδονίῳ[m]. Now the second of these days having been Metag. 21, Aug. 22, the eighth must have been Metag. 27, Aug. 28. The advice was executed, and the convoy of the Greeks intercepted, ὡς εὐφρόνη ἐγένετο; the night of Metag. 28 *ineunte*, Aug. 28. And here we may observe that as the true mean new moon of Metageitnion would fall Metageitnion 22, August 23, this moon would be only five days old August 28; and it would give some light between sunset and midnight, but would set an hour at least before midnight: and the rest of the night would be dark. This measure therefore of Mardonius' was probably executed before midnight.

After this, there is express mention of two more days, exclusive of the preceding[n]: Μετὰ δὲ τοῦτο τὸ ἔργον ἑτέρας δύο ἡμέρας διέτριψαν: Metag. 28 and 29, Aug. 29 and 30, the 9th and 10th since the meeting of the armies. This is confirmed by the next note of time[o]: Μέχρι μέν νυν τῶν δέκα ἡμερέων οὐδὲν ἐπὶ πλεῦν ἐγίνετο τουτέων. ὡς δὲ ἑνδεκάτη ἐγεγόνεε ἡμέρη—which brings us to the morning of the *eleventh* day, Metag. 30, Aug. 31—when Mardonius' council was held, and it was resolved to give battle the following day[oo]: Ὡς ἅμα ἡμέρῃ τῇ ἐπιούσῃ συμβολῆς ἐσομένης. The night of this *eleventh* day is mentioned in its order[p]: Νύξ τε ἐγίνετο κ', τ. λ.; and when it was a good deal advanced (ὡς δὲ πρόσω τῆς νυκτὸς προελήλατο), Alexander the Macedonian* came to the camp, to inform the Greeks of the recent resolution: Νῦν δέ οἱ δέδοκται τὰ μὲν

* Surnamed Φιλέλλην. The Scholia on Pindar, ad Nemea, vii. 1. have

[m] 39. [n] 40.

[o] ix. 41. (cf. 44, 45, 46. 47): Τά τε σφάγια τοῦ Ἡγησιστράτου ἐᾶν χαίρειν, μηδὲ βιάζεσθαι, ἀλλὰ νόμῳ τῷ Περσέων χρεωμένους συμβάλλειν: cap. 41. The Persian day of the month then seems here to require to be taken into account. The viith month, B. C. 479, (see the scheme supra p. 363 for B. C. 481 and 480, which is equally applicable B. C. 479) would begin Aug. 22 at sunrise. The day of this council, Aug. 31, at sunrise, would be the 10th of that month; and the battle, if expected to take place before sunrise the next day, would take place on the tenth of the Persian month. The proper name of this day was Abân; and it was sacred to the Angel which presided over the element of iron. If the battle was to take place after sunrise, it would be on the 11th of the month, the name of which was Chûr: sacred to the Ized who presided over the disc of the sun.

[oo] ix. 42.

[p] ix. 44. cf. Plutarch, Aristides, xv. and xvi. which come in here.

σφάγια ἐᾷν χαίρειν, ἅμα ἡμέρῃ δὲ διαφαυσκούσῃ συμβολὴν ποιέεσθαι[c]. This visit was probably made soon after midnight, Boëdromion 1, Sept. 1, when the moon would be eight days old; shining till midnight, but setting soon after. The history of the night in question is continued[f]: Ἐπεὶ *τοίνυν ἐς ἠῶ ἡ συμβολὴ γίνεται κ᾽, τ. λ.* The arrival of morning is next mentioned[g]: Ὡς *δ᾽ ἤρεσκε ἀμφοτέροισι ταῦτα, ἠὼς τε διέφαινε, καὶ διαλλάσσοντο τὰς τάξις κ᾽, τ. λ.* The morning of Boëdr. 1, Sept. 1.

The expected general action however was not brought on this day[h]; but there was a severe contest about the *κρήνη Γαργαφίη*; which determined the allies to change their position, and to post themselves on the *νῆσος*, formed by the confluence of the two arms of the Asopus; for which movement they fixed beforehand on the *δευτέρῃ φυλακῇ τῆς νυκτὸς*—that of Boëdromion 3 *ineunte*, Sept. 1, 2. And this also is a critical coincidence, if the watches of the Greeks were still only three in number, as in the time of Homer; the second beginning about two hours before midnight: for as the moon was *nine* days old, they must have been so timing their intended movement as to have moonlight, from two hours before to two hours after midnight, and dark for the rest of the night—the distance from their camp to the *νῆσος* being ten stades, one English mile at least; which in the night would probably require two hours' march.

Herodotus continues[i]: Ὡς *δὲ ἥ τε ἡμέρη ἔληγε καὶ οἱ ἱππέες ἐπέπαυντο, νυκτὸς δὴ γινομένης, καὶ ἐούσης τῆς ὥρης** *ἐς τὴν δὴ*

preserved a fragment of one of the odes of Pindar (viii. Ἐγκώμια, 3. Fragm. 85.) in honour of this Alexander, beginning

Ὀλβίων ὁμώνυμε Δαρδανιδᾶν
παῖ θρασύμηδες Ἀμύντα
κ᾽, τ. λ.

Cf. Dionys. Hal. De admir. vi dicendi in Demosthene, 26. 1034. 5: Dio Chrys. ii. 25. 1. pag. 83. A statue of gold was dedicated by him at Delphi, out of the spoils of the Persians made prisoners at Amphipolis. Demosthenes, Ἐπιστολὴ Φιλίππου, 23.

* The reader should by all means remark this use of *ὥρη*, which seems to be clearly that of *hour*, not *season*. See supra, page 240.

[e] ix. 44, 45. Plutarch, Aristides, xv.
[f] ix. 46.
[g] 47. Plutarch, Arist. xvi.
[h] 47–51. Plut. Aristides, xvi.
[i] ix. 52. cf. Plut. Aristid. xvii.

συνέκειτό σφι ἀπαλλάσσεσθαι, (i. e. the *δευτέρη φυλακή*), they set out accordingly; when the refusal of Amompharetus to quit his post in presence of the enemy, interposed an unexpected delay, and led in its consequences to the desertion of the Lacedemonians and Athenians by the greater part of the allies, as Pausanias reminds the Athenians the next morning[k]: *Προδεδόμεθα ὑπὸ τῶν συμμάχων, ἡμεῖς τε οἱ Λακεδαιμόνιοι, καὶ ὑμεῖς οἱ Ἀθηναῖοι, ὑπὸ τὴν παροιχομένην νύκτα διαδράντων* *. The dispute with Amompharetus took up the whole of the night[l]: *Τοὺς δὲ ἐπεὶ ἀνακρινομένους πρὸς ἑωϋτοὺς ἠὼς κατελάμβανε, κ', τ. λ.*

We are thus brought to the morning of the *thirteenth* day since the armies first confronted each other; Boëdromion 3, Sept. 2: and the battle having been fought on this day[m], there can now be no question that its actual date in the calendar for the time being must have been Boëdromion 3, not 4. And the Attic calendar in this instance is confirmed by the Bœotian, in which the same date was Panemus 27; and our own calendar is confirmed by both: the Attic Boëdromion 3, as we have seen, and the Bœotian Panemus 27, as we hope to see, having each fallen on September 2.

Section VIII.—*On the events in Greece later than the Battle of Platæa.*

The particulars after the battle do not concern our present purpose; and therefore may be briefly noticed, though we may have occasion to recur to some of them hereafter. The day after, Boëdrom. 4, Sept. 3, is mentioned[n]; on which the body of Mardonius was found to have disappeared[o], and the bodies of the Greeks who had fallen were buried[p]: and the day having been Boëdromion 4, it must have been this day of the *burial*, which Plutarch has confounded with that of the *battle*. On the eleventh day after[q], Boëdrom. 13, Sept. 12, siege was laid to Thebes: on the *twentieth* day of

* Cf. Lysias, Epitaphius ii. § 46: *Ἀποδράντων (δὲ) ὑπὸ νύκτα τῶν πλείστων συμμάχων ἐκ τῶν ταξέων.*

[k] ix. 60.
[l] ix. 56.
[m] 59–84. cf. Plut. Aristid. xvii–xix.
[n] ix. 84.
[o] Cf. Pausanias, ix. ii. 2.
[p] ix. 85
[q] 85, 86.

the siege it submitted, and the Medising Thebans were surrendered: Pyanepsion 2, October 1.

SECTION IX.—*On the date of the Battle of Mycale.*

The date of Platæa determines that of Mycale; for both battles took place on the same day—Τῆς δὲ αὐτῆς ἡμέρης τῆσπερ ἐν Πλαταιῇσι τὸ τρῶμα ἐγένετο συνεκύρησε γενέσθαι καὶ ἐν Μυκάλῃ τῆς Ἰωνίης [r]—the former in the morning, the latter in the afternoon, or towards the evening, of this day: Τὸ μὲν γὰρ ἐν Πλαταιῇσι πρωῒ ἔτι τῆς ἡμέρης ἐγίνετο, τὸ δὲ ἐν Μυκάλῃ περὶ δείλην. ὅτι δὲ τῆς αὐτῆς ἡμέρης συνέβαινε γίνεσθαι μηνός τε τοῦ αὐτοῦ, χρόνῳ οὐ πολλῷ σφι ὕστερον δῆλα ἀναμανθάνουσι ἐγένετο [s] *.

We have no occasion to trace the movements of the Greek fleet from Salamis, where (if any where) they wintered, further than Delos, whither they removed in the spring [ss]: for it is evident that they remained stationary at Delos all through the summer, until the arrival of Hegesistratus, and others, from Ionia [t], by whom they were persuaded to advance in the direction of Asia Minor. The sacrifices being

* Herodotus adds (cap. 100,) that the news of the victory of Platæa was already bruited in the Greek fleet before the battle at Mycale. So Justin, ii. xiv.: Tantam famæ velocitatem fuisse, ut cum matutino tempore prœlium in Bœotia commissum sit, meridianis horis in Asiam .... de victoria nuntiatum sit. Cf. Diodor. xi. 34, 35. Other instances of the rapid transmission of important news, especially that of great victories, are on record: for example, the victory at Sagras in Magna Græcia, when 10,000 Locrians defeated 120,000 Crotoniates, heard of the same day at Corinth, Athens, Sparta, and Olympia, where the games were going on: Strabo, vi. 1. 15. *ad calc.*: Justin, xx. 3. § 4: Suidas, Ἀληθέστερα τῶν ἐπὶ Σάγρᾳ: Proverbia Græca e Cod. Bodl. 148: Zen. ii. 17. Also the victory of the people of Crotona over the Sybarites, Pliny, H. N. vii. 22. The Scholia on Æschines, in Timarchum, 140, (Reiskii,) attest the same thing of the news of Kimon's double victory at the Eurymedon in Pamphylia: Ἀθήνησίν ἐστι βωμὸς Φήμης. Κίμωνος ἐν Παμφυλίᾳ νικήσαντος ναυμαχίαν καὶ πεζομαχίαν, αὐθημεροὶ ἔγνωσαν Ἀθηναῖοι, ὡς ὕστερον, αὐτοῦ διὰ γραμμάτων σημήναντος. ὅθεν πρῶτον καὶ βωμὸν τῇ Φήμῃ ὡς θεῷ ἀνιδρύσαντο. Roman history has similar instances. Cf. our Origines Kal. Italicæ, iii. 160. *note.*

r ix. 90. cf. Diodor. Sic. xi. 34, 35.
s ix. 101.
ss viii. 121. 131, 132, 133: cf. 130, the Persians wintering at Cuma, and assembling at Samos, in the spring.
t ix. 90, 91.

favourable, they set out the day after[v]. The distance from Delos to the coast of Mycale, in a right line, would be 100 Roman miles; and it might take two days' sail. They might have set out then the day before the battle, Boëdrom. 1, Sept. 1, and have arrived about noon the next day, Boëdrom. 3, Sept. 2; and their arrival must have been followed immediately by the battle[x].

The wreck of the Persian army retreated to Sardes[y]; where Xerxes still was[z], when it arrived: which, as the distance was 85 Roman miles direct, would probably not be before Boëdrom. 10, Sept. 9. His departure to Susa ensued soon after[a]; having been accelerated no doubt by the news of this fresh disaster, as well as by that of the defeat of Mardonius, which probably reached him at the same time.

SECTION X.—*On the date of the siege and the reduction of Sestus.*

Nothing is said in Herodotus of transactions on the coast of Ionia, after the battle, which could have occasioned any great delay, if the allied fleet, as he represents it, was desirous of proceeding forthwith to the Hellespont, in order to the destruction of the bridges there[b]; of which, though it had happened almost a year before, they must have been still ignorant, until they got to the Hellespont[c].

The voyage from Mycale to the Hellespont in later times might have been accomplished in three days and three nights[d]; and though we should allow twice the same length of time for it on the present occasion, even that would not require more than six days and nights. Adverse winds are certainly mentioned near the promontory of Lectum, on the coast of Troas, where the Greeks would be within 50 or 60 miles of their destination; but make what allowance we may for every conceivable cause of delay, there seems no reason why, if the battle of Mycale was over Sept. 2, Boëdromion 3,

[v] ix. 92. 96.
[x] 95–105. cf. vii. 80.
[y] ix. 107.
[z] cf. ix. 3: Diodor. xi. 36.
[a] ix. 108.
[b] ix. 106.
[c] ix. 114.
[d] Cf. our Dissertations on the Principles and Arrangement of an Harmony of the Gospels, iv. 516; and our Prolegomena ad Harmoniam Evangelicam, 254 *note*.

the allied fleet might not be at the Hellespont by the middle of the month.

On discovering that the bridges were no longer in existence, Leotychidas, with the Peloponnesian division of the fleet, returned home[e]; the Athenians, under Xanthippus, sat down to the siege of Sestus[f]. This siege would thus begin about the middle of September. Diodorus Siculus pretends that the place was taken, *εὐθὺς ἐκ κατάπλου*[ff], after which the Athenians too returned home: wherein he contradicts both Herodotus and Thucydides.

That the siege lasted into the *φθινόπωρον* of the natural year, appears from Herodotus' account of it[g]: Ἐπεὶ δὲ *πολιορκεομένοισί σφι φθινόπωρον ἐπεγένετο, καὶ ἤσχαλλον οἱ Ἀθηναῖοι, ἀπό τε τῆς ἑωϋτῶν ἀποδημέοντες καὶ οὐ δυνάμενοι ἐξελεῖν τὸ τεῖχος, ἐδέοντό τε τῶν στρατηγῶν ὅκως ἀπάγοιέν σφεας ὀπίσω· οἱ δὲ οὐκ ἔφασαν, πρὶν ἢ ἐξέλωσι, ἢ τὸ Ἀθηναίων κοινόν σφεας μεταπέμψηται· οὕτω δὴ ἔστεργον τὰ παρεόντα*: and this must imply that it lasted some time later than the autumnal equinox. The question is then how much later?

Now it appears that the arrival of the fleet at Sestos took the Persian commander by surprise[h]: Τότε δὲ *ἐπολιορκέετο ὑπὸ Ἀθηναίων, οὔτε παρεσκευασμένος ἐς πολιορκίην, οὔτε προσδεκόμενος τοὺς Ἕλληνας· ἀφυλάκτῳ δέ κως αὐτῷ ἐπέπεσον.* It appears too[h] that it contained more than its ordinary inhabitants, when siege was laid to it, the Persians from all parts, on the approach of the Greeks, having flocked thither for refuge. Though then it resisted to the last extremity, its resources (especially the means of subsistence) would be the sooner exhausted. The escape of the garrison by night[i] argues a moonlight night; and there would be a full moon about October 7: and about that time should we date the actual capture*. If so, Herodotus might well add, by way

* Thucydides also has mentioned this siege of Sestus by the Athenians, i. 89. He brings the allied fleet to these parts, as Herodotus does, and then supposes Leotychides and the Peloponnesians to have returned home, the Athenians with their allies, *ἀπὸ Ἰωνίας καὶ Ἑλλησπόντου*, to have remained on the spot and laid siege to Sestus: *Ὑπομείναντες Σηστὸν ἐπολιόρ-*

[e] ix. 114.
[f] 114–121. cf. Thucyd. i. 89.
[ff] xi. 37.
[g] ix. 117. cf. vii. 33.
[h] ix. 116. 115.
[i] 118.

of conclusion to all the preceding accounts, Καὶ κατὰ τὸ ἔτος τοῦτο οὐδὲν ἔτι πλέον τουτέων ἐγένετο[k]: for after the first or second week in October it would be too late to think of any thing but returning home.

κουν Μήδων ἐχόντων. He adds, Καὶ ἐπιχειμάσαντες εἷλον αὐτὴν ἐκλιπόντων τῶν βαρβάρων: after which they too returned home.

The late learned author of the Fasti Hellenici, having committed himself to the hypothesis that the civil year of the Athenians always began at the summer solstice, under the influence of this prejudice, laying together this statement of Thucydides, καὶ ἐπιχειμάσαντες εἷλον αὐτὴν, and that of Herodotus, καὶ κατὰ τὸ ἔτος τοῦτο οὐδὲν ἔτι πλέον τουτέων ἐγένετο, drew from both the inference that the year of the Athenians at this time must have come to an end after the winter. But to justify this inference, so far as the language of Thucydides is concerned, it is necessary he should be understood to have meant by his statement, that the Athenians passed the winter in besieging Sestus, and took the place after it was over, in the spring. If he had meant that, he would have used the verb διαχειμάσαντες, not ἐπιχειμάσαντες. Mr. Clinton could not have attended to the distinction of these verbs. Ἐπιχειμάσαι denotes simply to pass *into* the winter, but not *through* the winter; διαχειμάσαι of course denotes to pass *into* the winter, but also *through* the winter. The former is not so common of occurrence as the latter; but the distinction, which we have just pointed out between their respective meanings, is founded in the reason of things, and such as no competent Greek scholar will dispute. And Thucydides, knowing that this siege was begun before the autumnal equinox, (that is, before his own chronological summer had come to an end,) and was protracted until some time after the equinox, (i. e. into his own chronological winter,) used this verb ἐπιχειμάσαντες, instead of διαχειμάσαντες, on purpose to mark that distinction—viz. that the siege lasted *into* his winter, but not *through* his winter. He might truly say so, if it lasted a fortnight after the equinox; much more if it lasted three weeks or a month, as it possibly might have done.

[k] ix. 121.

CHAPTER IV.

On the date of the Battle of Salamis in Cyprus.

SECTION I.—*A second Battle of Salamis in Athenian and Persian history.*

That Plutarch was no stranger to the true date of the battle of Salamis, neither to the month, Boëdromion, nor to the day of the month, the 20th, has been seen[m]. We learn also from his life of Camillus[n] that the subject of days, as distinguished by particular coincidences, some of a fortunate others of an unfortunate character, was one on which he wrote a treatise; containing no doubt a collection of the most remarkable instances of the kind known to himself, and derived, as there is reason to believe, as much from Athenian history and tradition in particular, as from Hellenic history in general.

It would consequently be a most unaccountable mistake for him to have made, if in any other allusion to the date of this victory, he could be shewn to have assigned it a totally different month and a totally different day of the month. And yet there are two occasions on which he speaks of a victory of the Athenians over the Persians, and a victory by sea, and a victory at Salamis, (and therefore apparently the well known victory so called,) in the month Munychion, not Boëdromion, and on the 16th of that month, not on the 20th. In the first of these instances, he had a particular reason to make him more careful about the date; because the same month, and the same day of the month, happened to be that *in* which, and *on* which, at the close of the Peloponnesian war, B. C. 404, Lysander took possession of the fleet and long-walls of the Athenians: Ὁ δ' οὖν Λύσανδρος, ὡς παρέλαβε τάς τε ναῦς ἁπάσας, πλὴν δώδεκα, καὶ τὰ τείχη τῶν Ἀθηναίων, ἕκτῃ ἐπὶ δέκα Μουνυχιῶνος μηνὸς, ἐν ᾗ καὶ τὴν ἐν Σαλαμῖνι ναυμαχίαν ἐνίκων τὸν βάρβαρον, ἐβούλευσεν εὐθὺς καὶ τὴν πολιτείαν μεταστῆσαι[o]. In the second, it is enumerated

[m] Chapter ii. [n] Cap. xix. [o] Lysander, xv.

in its place[p], among other coincidences of the same kind, with an additional circumstance, very important, as we shall see hereafter, in fixing its date, and in distinguishing it from that of Salamis, B. C. 480. These allusions are consistent. Each is evidently to the same event. Each looks like the statement of one who knew what he was saying, and could not possibly have been forgetting himself so far as to be thinking of the well known battle of Salamis, and confounding the autumn of the natural year with the spring, the month Boëdromion with Munychion, and the 20th of the month with the 16th.

Though then these two other testimonies of Plutarch, apparently to the date of Salamis, did certainly induce Scaliger to date that battle Munychion 16[q], chronologers in general have seen the necessity of searching for some other naval victory of the Athenians over the Persians, nominally indeed the same with the memorable victory so called, but really different from it, to which these statements of Plutarch might possibly be as applicable, as they would be incongruous to the other. And they have found this desideratum in another fact in Athenian history, that of a victory over the Persians, and a victory by sea, and a victory by sea at Salamis; but not at Salamis in the Sinus Saronicus, but Salamis in the island of Cyprus.

The fact of a victory in this quarter by sea may be collected from Plutarch's life of Kimon[r]; and one by land, and another by sea, from Diodorus Siculus[s]: and the fact of both, with this further circumstance, that they were both obtained in one day, from Thucydides, even in his short account of the last expedition of Kimon's against the Persians, in the course of which, while besieging Kitium, in Cyprus, he died[t]: *Κίμωνος δὲ ἀποθανόντος καὶ λιμοῦ γενομένου ἀπεχώρησαν ἀπὸ Κιτίου· καὶ πλεύσαντες ὑπὲρ Σαλαμῖνος τῆς ἐν Κύπρῳ Φοίνιξι καὶ Κίλιξιν ἐναυμάχησαν καὶ ἐπεζομάχησαν ἅμα, καὶ νικήσαντες ἀμφότερα ἀπεχώρησαν ἐπ' οἴκου.*

This testimony is all that is necessary to explain those other statements of Plutarch, and to reconcile them to the accredited date of the battle of Salamis, B. C. 480; if this

p De Gloria, vii. q De Emendatione, i. 45: cf. v. 407.
r Cap. xviii. s xii. 3. t i. 112.

victory was gained at Salamis in Cyprus, as the other was at Salamis off the coast of Attica, and in the month Munychion, as that was in the month Boëdromion, and on the 16th of the month, as the other was on the 20th. To none of which suppositions is there any objection *a priori*. That this too must have been a memorable occasion in Attic history, there can be no question; especially if it was followed by the submission of the Persians, and by the well known peace, sometime or other dictated to the Persian king Artaxerxes: as it might have been, and as Diodorus, in particular, says it was[v]; though Plutarch implies that this peace was the effect of the battle of the Eurymedon, an event of much older date, yet remarkable like this for a double success (by land and by sea) on the same day[x]. Be this as it may, the double victory, now obtained at Salamis in Cyprus, was the last of the successes of the Athenians over the Persians; and the close of that series of triumphs which signalizes their history from the date of Marathon to that of these victories: as Plutarch himself observes[y].

Section II.—*On the date of the last expedition of Kimon against the Persians.*

The accounts of this expedition to Cyprus under Kimon, by Thucydides[z], Diodorus[a], and Plutarch[b] respectively, do certainly differ; but not so as to affect the fact of this victory in general, or that of its date in particular. The principal points of difference are *these;* That, according to Diodorus and Plutarch the victory was obtained in the *first* year of the expedition, according to Thucydides in the *second;* according to the former *before* the death of Kimon, according to the latter *after* it. The fact of the victory on each of these suppositions is just the same; and its date in the calendar must be the same too. But among these different statements, none could reasonably be preferred to that of Thucydides, the oldest authority of all, and a contemporary of Kimon's himself. And as he alone has specified the additional circumstance of the victory by land as well as by sea, on the same

[v] xi. 4.

[x] Kimon, xiii. cf. Thucyd. i. 100: Lycurgus contra Leocratem, § 73, 74: Aristides, xlvi. 208, 209: Cornelius Nepos, Kimon, cap. ii.: Suidas, Κίμων.

[y] Kimon, xix.

[z] i. 112.

[a] xii. 3. 4.

[b] Kimon, xviii. xix.

day, and tells us distinctly that both battles were fought and won after the death of Kimon, and after the Athenians, in consequence of that event, had raised the siege of Kitium, we need not hesitate to infer not only that they must really have happened after the death of Kimon, but also when the Athenians were returning home; having given up not only the prosecution of the siege of Kitium, but even the idea of any further proceedings. These two battles therefore must have been the last events of the expedition. They must have been the end of the expedition: and consequently, if they happened in the month Munychion, they could not have happened in the first year of the expedition; but, at the earliest, only in the second. The testimony of Thucydides therefore does virtually confirm Diodorus[c]; according to whom the expedition actually lasted two years.

We will assume then that such was really the case; that this expedition of Kimon's was undertaken in one year, and these two victories were gained in the next. We will assume too that the first of these years was the year of Pedicus, though Diodorus makes it the year of Euthydemus[d]; and the second was the year of Philiscus, though Diodorus makes it that of Pedicus. But the infallible testimony of astronomy, as we hope to see by and by, proves that it could have been only the year of Philiscus. The year of Pedicus, according to the common arrangement, would begin Hecatombæon 1 B. C. 449: according to the corrected one[e], Gamelion 1 B. C. 448: the year of Philiscus, according to the former, Hecatombæon 1 B. C. 448, according to the latter, Gamelion 1 B. C. 447. And this (if we are right in our assumptions) must have been the true year of this victory at Salamis in Cyprus: and the day and the month in that year, the 16th of Munychion in the Attic calendar of the time being.

SECTION III.—*On the circumstances of the Battle of Salamis in Cyprus, and on the Lunar Character of the Calendar-date of the Battle.*

In the Lysander of Plutarch the date of this victory was specified simply as the 16th of Munychion. But in the trea-

[c] xii. 3. 4. cf. 2: xi. 92. [d] xii. 3. cf. 5. and xi. 92.
[e] Supra, page 184.

tise De Gloria[f] there is a more circumstantial description of it; which is strictly to be taken into account, if we would form a correct idea of the relation of the true lunar date of the event to the calendar or civil one at the time.

Τὴν δὲ ἕκτην ἐπὶ δέκα τοῦ Μουνυχιῶνος Ἀρτέμιδι καθιέρωσαν, ἐν ᾗ τοῖς Ἕλλησι περὶ Σαλαμῖνα νικῶσιν ἐπέλαμψεν ἡ θεὸς πανσέληνος[f]. It is implied in this statement that the moon was known to have risen in the midst of this battle, (before the battle at least was over,) though not before the Athenians were in the act of conquering. It rose as the victory was being decided in their favour. It "shone out upon them in the act of conquering," as if on purpose to greet them as conquerors. And if it was known to have risen and appeared under such circumstances, *πανσέληνος*—(*pleno orbe*)—it was known to have risen and appeared at the full. And if it rose at the full, or somewhat past the full, it could not have risen before sunset; and if it rose at sunset, or not before sunset, (and much more, if a little after sunset,) it could not have risen before the beginning of the Attic day, which was reckoned from sunset. And if the battle was just over or just beginning to be decided when the moon was thus rising at or later than the beginning of the Attic day; it will follow from this fact too that, though the victory must have been won on the 16th of the current month, reckoned according to the Attic rule, the battle must have been begun on the 15th.

We infer then from these words of Plutarch that the circumstances under which this battle of Salamis in Cyprus was fought and won must have been as follows. The battle began in the daytime, and the contest was protracted until after sunset; and then, just as it was decided in favour of the Athenians, just as the victory was won, the full moon appeared in the horizon: the full moon shone out upon them. And the action having been fought in the month Munychion, (a month supposed to have taken its name from Artemis Munychia herself[g],) this coincidence determined the Athenians to consecrate the day of the victory, the 16th of Munychion, to the goddess, the patroness of the month; and to

[f] Cap. vii. [g] See supra, page 103.

appropriate it to her ever after by a special ceremony: as Plutarch says was done.

We draw then, from all these facts laid together, the following important inference; that this battle of Salamis in Cyprus was fought and won at that period in the decursus of the civil calendar for the time being when the full moon, or what might still be considered the full moon, was coinciding with the 16th of the month, the 16th *ineunte*. The half of a mean lunation being little more than 14 d. 18 h. 22 m. of mean time long, the moon is commonly at the full on the 15th day from the conjunction. Geminus however observes, that this phenomenon might occur as early as the 13th, and as late as the 17th—Πανσέληνος δὲ γίνεται ταχίστη μὲν περὶ τὴν ιγ′ βραδυτάτη δὲ περὶ τὴν ιζ′ [h]. In fact, there is little difference in the visible appearance of the moon, the day before the full, and the day after the full; and in the common or popular language of the astronomy of the time the moon was still spoken of, in some sense or other, as πανσέληνος, until it had actually become ἀμφίκυρτος: a change in its appearance which Geminus tells us also [h] could not happen earlier than the 18th day from the conjunction, and might happen as late as the 22d. So that, as a general rule, from the 15th day of the moon's age to the 18th at least (which would include both the 16th and the 17th) it might still be regarded and spoken of as πανσέληνος.

Attic Calendar, Cycle xix. 2. *B. C.* 447.

Month.	Days.		Midn.	Month.	Days.		Midn.
i. Gamelion	29..	January	8	vii. Hecatombæon	29 ..	July	4
ii. Anthesterion	30..	February	6	viii. Metageitnion	30 ..	August	2
iii. Elaphebolion	29..	March	8	ix. Boëdromion	29 ..	Sept.	1
iv. Munychion	30..	April	6	x. Pyanepsion	30 ..	——	30
v. Thargelion	29..	May	6	xi. Mæmacterion	29 ..	October	30
vi. Skirrhophorion	30..	June	4	xii. Posideon	30 ..	Novemb.	28

The 16th of Munychion, according to this scheme, would begin to be current April 20 at sunset. And this must consequently have been the date of the victory—if gained after sunset; as that of the battle which preceded it, strictly

[h] Cap. vii. Uranolog. 40 A–C.

understood, must have been Munychion 15, before sunset. The precise time of the victory *on* this day, it appears, was the actual time of the rising of the moon the same day—sometime after sunset—though how long after can be known only from calculation; except that it must have been while there was still more or less of daylight—it could not have been so long after sunset, that the night had already set in. We have calculated the full moon of April, B. C. 447, for the meridian of Salamis in Cyprus; and found it April 19, as nearly as possible at 13 h. 38 m. mean time from midnight *. This moon would consequently rise about 10 minutes after sunset, April 19, Munychion 15 *ineunte;* and about one hour later, April 20, Munychion 16 *ineunte*—when there must still have been daylight for the latitude of Salamis in Cyprus, at this season of the year, even after sunset; and when the moon, only 29 hours past the opposition, would still be exhibiting the form and appearance of the full †.

		h.	m.	s.	
* B. C. 447.					
Mean full moon,	April 18	23	9	1	m. t. Greenwich.
	April 19	1	25	23	m. t. Salamis.
True full moon,	April 19	11	21	59	m. t. Greenwich.
	April 19	13	38	21	m. t. Salamis.

† It is here to be observed that, among the offerings peculiar to the Munychian Artemis, mention is made of a sort of cakes, called Ἀμφιφῶντες. Suidas gives an account of these first, under Ἀμφιφῶντες· Πλακοῦντος εἶδος, οἵτινες ἐγίνοντο ὅτε ὁ ἥλιος καὶ ἡ σελήνη πρωῒ ὑπὲρ γῆς φαίνονται· ἢ ὅτι ἐκόμιζον αὐτὸν, δᾳδία ἡμμένα περιπηγνύντες ἐπ' αὐτῷ· ὥς φησιν Ἀπολλόδωρος. And again, in Ἀνάστατοι· . . . Οἱ δὲ ἀμφιφῶντες γίνονται Μουνυχιῶνος μηνὸς ἕκτῃ ἐπὶ δέκα, οἳ καὶ εἰς τὸ Μουνυχίας ἱερὸν τῆς Ἀρτέμιδος κομίζονται. ὀνομάζονται δὲ ἀμφιφῶντες ὡς μέν τινες ὅτι τότε γίνονται ὅτε ἥλιός τε καὶ σελήνη πρωῒ ὑπὲρ γῆς φαίνονται· ὡς δὲ Ἀπολλόδωρος, ὅτι κομίζουσιν αὐτοὺς δᾳδία ἡμμένα περιπηγνύντες ἐπ' αὐτῶν. That such cakes were consecrated to Artemis Munychia appears also from Pollux[1]: Μάζαι δὲ αἱ μὲν ἱεραὶ, ἀμφιφῶντες μὲν, ἃς ἔφερον εἰς Μουνυχίας Ἀρτέμιδος, δᾷδας ἡμμένας περιπήξαντες κ', τ. λ. Cf. Hesychius: Ἀμφιφόων· Πλακοὺς ποιὸς, Ἀρτέμιδι μετὰ δαίδων προσφερόμενος. Etym. M. Ἀμφιφῶν· εἶδος πλακοῦντος τελούμενος τῇ Ἀρτέμιδι . . διὰ τὸ κύκλῳ φωτίζεσθαι ὑπὸ τῶν δᾴδων· ἢ διὰ τὸ πανσελήνου οὔσης πέμπεσθαι τῇ Ἑκάτῃ. Eustathius[2]: Ἀμφιφῶν προσηγορεύθη πλακοῦς διὰ τυροῦ, ἐφ' οὗ δᾷδα πήσσοντες ἅπτουσι τοῦ φωτὸς χάριν. But next to the testimony of Suidas, that of Athenæus is most to

[1] vi. xi. 1. 610. [2] Ad Iliad. Σ. 575. 1165. 13.

our purpose at present[3]: Ἀμφιφῶν. πλακοῦς Ἀρτέμιδι ἀνακείμενος. ἔχει δ' ἐν κύκλῳ καόμενα δᾴδια· Φιλήμων ἐν Πτωχῇ ἢ Ῥοδίᾳ·

> Ἄρτεμι φίλη δέσποινα τοῦτόν σοι φέρω
> ὦ πότνι' ἀμφιφῶντα, καὶ σπονδήσιμα.

μνημονεύει δ' αὐτοῦ καὶ Δίφιλος ἐν Ἑκάτῃ. Φιλόχορος δὲ ἀμφιφῶντα αὐτὸν κληθῆναι (λέγει) καὶ εἰς τὰ τῆς Ἀρτέμιδος ἱερὰ φέρεσθαι, ἔτι δὲ καὶ εἰς τὰς τριόδους, ἐπεὶ ἐν ἐκείνῃ τῇ ἡμέρᾳ ἐπικαταλαμβάνεται ἡ σελήνη ἐπὶ ταῖς δυσμαῖς ὑπὸ τῆς τοῦ ἡλίου ἀνατολῆς, καὶ ὁ οὐρανὸς ἀμφιφῶς γίνεται.

There can be no doubt, if these cakes were offered to Artemis only under the name of the Munychian, and only in the month Munychion (in which this victory at Salamis was obtained), and only on the 16th of Munychion (the day on which it was obtained)—there can be no doubt, we say, that this ceremony grew out of the victory and its circumstances. Plutarch told us the day of the victory was consecrated to Artemis Munychia; and we learn, from the above testimonies, that the proper service of the day, so consecrated to her, was the offering of these *ἀμφιφῶντες*. The calendar date of this ceremony then—the 16th of the month Munychion—confirms not only the historical date of the victory, the 16th of Munychion also; but, what is still more to the purpose, the lunar character of the day of the victory, the sixteenth or seventeenth of the moon at least.

For among the other reasons assigned for the offerings of this day, in the shape of cakes, circular themselves, and surrounded by lighted torches, one was that they were a type of the heavens, or of the sensible horizon, when lighted up by both the sun and the moon at once—yet not in the *evening*—as would be the case at the full of the moon, when the moon might be rising as the sun was setting—but in the *morning* early, when the sun was rising in the east, and yet the moon was still to be seen in the west. Now *that* begins to be the case first only when the moon is *one day* past the full. That is, if the full takes place on the evening of the fifteenth, this phenomenon, properly speaking, will first be perceptible on the morning of the sixteenth. And that was exactly the state of the case at the time of this victory of Salamis in Cyprus. The moon rose an hour after the sun had set on the evening of the victory; and consequently it set an hour or more after the sun had risen, the next morning: and that night was light all through—not being yet dark when the moon was rising, and being still lighted up by the moon when the sun was rising.

There can be no question then that tradition must have handed down the circumstances of this victory correctly; that the date of the victory was the 16th of Munychion; that the battle was fought on the 15th *before* sunset, and the victory was won on the 16th *after* sunset; in particular that the moon rose as the battle was being decided, and as Plutarch expressed it, *ἐπέλαμψε νικῶσιν*: from which it follows that the moon must have risen the same day, for the latitude of Salamis in Cyprus, after the sun had set for the same latitude, but before it was yet dark. And this is a characteristic of the time and circumstances of the event, which is very

[3] xiv. 53.

important to the further question of the year of the victory; concerning which, as we have already intimated, there is some doubt.

It is to be regretted that the chronology of this expedition of Kimon's cannot be certainly collected from the summary of Thucydides; further than that it must have come in the course of the five years' truce, the conclusion of which he mentions in its proper order of time[4]. This truce appears to have expired B. C. 446[5], and therefore must have been concluded B. C. 451. The expedition of Kimon certainly came between these extremes; but whether in the third year, B. C. 449, or in the fourth, B. C. 448, at first sight is doubtful. Diodorus' testimony would imply the former, but the necessity of the case requires the latter.

For if this expedition was undertaken in the year of Euthydemus, according to Diodorus, B. C. 450 = 449, then, unless it lasted three years in all instead of two, Kimon died and the battle of Salamis was fought, in the year of Pedieus, B. C. 449 = 448. The 16th Munychion, 448, cycle xv. 1. began to be current at sunset May 1. Let us therefore inquire into the age of the moon, and the time of its rising, for the latitude of Salamis in Cyprus, relatively to sunset for the same latitude, May 1, B. C. 448.

Sunset, on this day, for the latitude of Salamis in Cyprus, is found from calculation to have taken place at 18.38.15 from midnt. apparent time; 18.32.26 from midnt. mean time. The moon was at the full for the meridian of Salamis in Cyprus, in the month of April, B. C. 448, according to our own calculation, April 29, 22h. 13m. 22s. mean time—from which it would be easy to infer that it could not have been rising for the same latitude May 1 (almost two days later) earlier than 20. 48; two hours and upwards later than sunset the same day. To put this out of question however, we have had the exact time of the moon's rising on that day calculated, with as much accuracy as possible; and it has thereby been found that the apparent time of the rising of the moon's centre, May 1, was 21h. 8m. 47s. from midnight, 2h. 30m. 32s. later than sunset, the same day, 18h. 38m. 15s. apparent time. So that it is impossible this could have been the moon which, as Plutarch told us, shone out upon the Athenians as they were conquering, unless the battle was really still undecided and still going on some time after dark.

This year then, B. C. 448, being excluded by the circumstances of the case, let us apply the same test to the next, the year of Philiscus, not that of Pedieus, B. C. 447. The moon of April this year, as we have seen, was at the full April 19, 13.38.21 m. t. for the meridian of Salamis in Cyprus; and the sun set the same day, for the same latitude, April 20, 18.26.2 apparent time, 18.23.31 mean time. It is manifest then that the moon, which was only 28 hours past the opposition at sunset that day, must have been rising little more than an hour after sunset; and consequently still before the end of daylight. But to put that too out of question, we have had the exact time of its rising, for the latitude of Salamis in Cyprus, accurately calculated in this instance also. The result is, that the moon's centre rose at Salamis, on the day in question, April 20, B. C. 447, at

4 i. 112. 5 Cap. 114, 115. cf. ii. 1.

This is as close a coincidence between the actual calendar date of the phenomenon, handed down by tradition, the 16th of Munychion, and the true lunar date, necessarily collected from the circumstances of the case, as can be desired. It is consequently a proportionately strong confirmation of the truth of the tradition; and of the truth of our own calendar, in which the same coincidence holds good. Our calendar date of the battle of Salamis in Cyprus, and the traditionary date of the same, under such circumstances, must have been identical. We shall therefore conclude with a brief notice of some of the historical circumstances of this expedition of Kimon's, on which also our calendar is calculated to throw some light.

SECTION IV.—*On the last expedition of Kimon, B. C. 448 and 447, and its circumstances in general.*

i. It may be inferred from Plutarch[i] that the expedition could not have set out before the Dionysia, B. C. 448: the sacrifice to Dionysos by Kimon, before the departure of the fleet, at least, is best explained by supposing him to have been still at Athens at the Dionysia[k]. The date of the Dionysia, ἐν ἄστει, may be generally assumed about Elaphebolion 11–13; which, B. C. 448, would be March 29–31. The mean vernal equinox this year fell March 27, the true March 26. The Dionysia therefore and the equinox as nearly as possible coincided; and the sea, at this period of ancient history, being considered open for fleets, and expeditions abroad, not before the vernal equinox on the one hand, and yet after the Dionysia on the other[l], this may explain why Kimon should have been preparing to set out just at this juncture, immediately after the equinox, and immediately after the Dionysia.

19h. 57m. 3s. from midnight, 1h. 27m. 3s. after sunset, 18h. 30m. from midnight. And this calculation cannot be far from the truth; though it is possible that with the fresh corrections which the lunar tables have experienced since it was made, the interval between sunset and moonrise, as here given, may be so far diminished as to bring the latter within little more than an hour or an hour and a quarter of the former—that is to say, just at the end of twilight.

[i] Kimon, xviii.

[k] Cf. supra, page 194. the parallel case of B. C. 468.

[l] See Theophrastus, Characteres, iii. Περὶ Ἀδολεσχίας, 842. § 2.

ii. It appears also from Plutarch [m] that while Kimon was still at Cyprus, he sent persons to consult the oracle of Jupiter Ammon; and that by way of Egypt: yet so short a time before his death that these *θεωροὶ* of his, having received an ambiguous answer, the secret meaning of which, according to Plutarch, was that Kimon would not be found alive on their return, had got no further than the Athenian encampment in Egypt, when they heard of his death; the news of which had followed them to Egypt. Now it is certain from Thucydides [n] that he must have died before the battle; i. e. before Munychion 15 or 16, April 20 B.C. 447. These *θεωροὶ* therefore must have been sent to consult the oracle some time in March: especially as one reason for their being sent, according to Plutarch, was that Kimon might receive directions respecting his future proceedings. He would send them therefore at the very beginning of the usual season of military operations; or even before it: which would not be earlier, by sea at least, than the vernal equinox. And herein we may observe *this* coincidence; viz. that there seems to have been a stated time for the consultation of this oracle of Jupiter in Lybia, and that time the vernal equinox; or rather March 31 [o]. The messengers of Kimon therefore were probably despatched so as to arrive at the temple by March 31; and would be returning between that time and April 20—when they were met by the news of his death. And it will follow from these facts that his death probably happened between March 31 and April 20 *.

iii. It is stated by Plutarch also [oo], on the authority of Phanodemus, that the death of Kimon was concealed even from the Athenians with him (all but his own friends and council) 30 days: Τελευτῶν δὲ τοὺς περὶ αὐτὸν ἐκέλευσεν εὐθὺς ἀποπλεῖν, ἀποκρυψαμένους τὸν θάνατον αὐτοῦ. καὶ συνέβη μήτε τῶν πολεμίων μήτε τῶν συμμάχων αἰσθομένων ἀσφαλῶς αὐτοὺς ἀνακομισθῆναι, στρατηγουμένους ὑπὸ Κίμωνος ὥς φησι Φανόδημος τεθνηκότος ἐφ' ἡμέρας τριάκοντα. To reconcile this fact with

* Or rather, if the messengers were really at the temple on March 31, and this answer, Αὐτὸν γὰρ ἤδη τὸν Κίμωνα παρ' ἑαυτῷ τυγχάνειν ὄντα, was really made them there, he must have died before March 31.

m Kimon, xviii.

n i. 112. cf. Plutarch, Pericles, xi.

o Cf. our Fasti Catholici, iv. 251–261.

oo Kimon xix.

the other of his death's having been known of in Egypt before the fleet there returned home, we must suppose that confidential persons were sent from Kitium, where he certainly died[p], to announce it to them, and to order them home. On this principle however the battles of Salamis by land and sea must have been both fought and won, with Kimon nominally still in command: which perhaps would have been too remarkable a circumstance, if true, to have been omitted by Thucydides. Be this as it may; the true date of the death of Kimon may have been known to Phanodemus, and how long after it was that the Athenians arrived at home. And it is observable that he calls it 30 days, not a month; and it must have been 30 days made up of parts of two months: from a certain day in Elaphebolion or Munychion, before the 15th, to the same day in Munychion or Thargelion.

iv. It was mentioned by Thucydides that among the other reasons why the siege of Kitium was broken up, and the fleet returned, besides the death of Kimon, one was a λιμὸς, or scarcity, which deprived them of the means of subsistence. This was most likely to be felt just before the harvest of the year would come in; and barley-harvest, the earlier of the two, even for the opposite coast of Palestine could not have been earlier that year than the end of April: much less for the latitude of Kitium in Cyprus. The Passover would be celebrated in Judæa, B.C. 447, on April 18[q]; and ripe barley would no doubt be found on the 16th of Nisan, April 20: but the harvest would not be generally ready before the end of the month.

[p] Cf. Corn. Nepos, Kimon, iii. 3. 4: Suidas, Κίμων.

[q] Cf. our Prolegomena ad Harmoniam Evangelicam, and the Calendar there given, Page lvii. Tabula lvii. Period. iv. Cyclus x. 1.

DISSERTATION III.

On the Metonic Correction.

CHAPTER I.

On the Solar Calendar of Meton.

SECTION I.—*On the Time chosen by Meton for the Correction of the Calendar of Solon.*

THE epoch of the Lunar Calendar of Solon having been Gamelion 1 B. C. 592, and the Cycle by which it was regulated the Octaëteric, then, from the nature and law of that cycle, at the end of even the first eight years of its decursus, the civil dates of the new or the full moons would no longer be found to correspond to those of the true; but, having begun to be a day and an half behind them, would be found to go on receding ever after at the rate of three days in two cycles or sixteen years: until at last the difference between a given calendar date and that of the new or of the full moon, which had been attached to it originally, would be seen to have accumulated to an entire lunation in recession or defect on the one hand, and in precession or excess on the other.

Under these circumstances, any attempt to improve the Civil Calendar, by substituting for this cycle a more accurate reckoning of the same kind, before the lapse of at least one cyclical Period, peculiar to the Octaëteris, must have been premature. Between B. C. 592, the epoch of the Calendar of Solon, and B. C. 432, the expiration of this first period, no such correction could have been carried into effect, without so violent a change in the epoch of the cycle, and in the style of the calendar in general, as must have been considered *a priori* a great objection to it.

It is therefore a remarkable fact, and well calculated to confirm the conclusions established in the last two Dissertations, that the first actual attempt to improve on the idea of the first lunar correction among the Greeks in general (the correction of Solon, of which we have just given an account) was not earlier than B. C. 432. At this point of time, but not a moment earlier, a correction of the calendar of Solon was made public at Athens, which ultimately superseded it there; as it also did, in the course of time, the same kind of calendar every where else. At this point of time too, but not before, the old Octaëteric cycle was beginning to be again as true, or nearly as true, to the moon as it had been at first. This was consequently the juncture of circumstances, pointed out by the nature of the case and the reason of things, for introducing a change of the style, and substituting a new and improved lunar reckoning for that which was still in use. At this point of time, but not a moment before it, the new lunar style was competent to take the place of the old, just as imperceptibly and just as regularly, as the old lunar style itself had done that of the old solar one, B. C. 592.

It appears accordingly, from the testimony of history, that *this* was the time actually selected by Meton for proposing his own correction; though its adoption by the people of Athens did not take place until some years later. The coincidence is striking; and it ought to be allowed its weight in confirmation of the conclusions which we have endeavoured to establish: i. That the epoch of the Calendar of Solon *de facto* was B. C. 592: ii. That the Cycle by which it was regulated from the first *de facto* was the Octaëteric: iii. That this Calendar, so regulated, *de facto* was allowed to run through one cyclical Period, peculiar to the Octaëteris, before any attempt was made to correct and improve it.

SECTION II.—*On the personal history of Meton.*

The individual to whom the Athenians were indebted for this improvement of their civil calendar, and who really, by means of it, conferred as great an obligation upon them as Solon himself had done by his original correction of the equable solar year—was Meton. His *name* has been handed down: and from the celebrity of his correction, and from the general reception which it obtained at last, it might have been expected that something would also have been found on record concerning his personal history: which however is not the case. Diodorus[r] tells us he was the son of Pausanias*; and though Ælian[s] (as his text stands at present) calls him Μέτων ὁ Λάκων—we have the testimony of Theophrastus that he was an Athenian. A passage was cited[t] from the scholia on Aristophanes, which threw some light on the history of his Cycle, if not of its author; and as the same statement occurs in Suidas[v] with variations, we may be excused if we produce it again here: Μέτων ὁ μαθηματικός. καὶ Μέτωνος ἐνιαυτός. οὗτος ὁ Μέτων ἄριστος ἐγένετο ἰατρὸς[x], καὶ ἀστρονόμος· τούτου ἐστὶν ὁ λεγόμενος Μέτωνος ἐνιαυτός. Καλλίστρατος δέ φησιν εἶναι αὐτοῦ ἐν Κολωνῷ ἀνάθημά τι ἀστρονομικόν· Εὐφρόνιος δὲ ὅτι τῶν δήμων ἦν ἐκ Κολωνοῦ. πρὸ Πιθοδώρου δὲ ἡλιοτρόπιον ἦν ἐν τῇ νῦν οὔσῃ ἐκκλησίᾳ πρὸς τῷ τείχει τῷ ἐν Πνυκί. ἢ ὅτι ἐν Κολωνῷ κρήνην τινὰ κατεσκευάσατο· φησὶν ὁ Φρύνιχος Μονοτρόπῳ·

> Τίς δ' ἐστὶν ὁ μετὰ ταῦτα φροντίζων; Μέτων
> ὁ Λευκονοιεύς. Οἶδ', ὁ τὰς κρήνας ἄγων.

It would seem then there must have been a difference of opinion, respecting the Δῆμος of Meton, whether Kolonus, or Leuconoië; in which case there must have been the same

* The name of Μέτων is not of common occurrence; and yet it is not unexampled. The celebrated poet and philosopher Empedocles is always designated as the son of Meton. Plutarch, De Placitis Phil. i. γ' Ἐμπεδοκλῆς Μέτωνος—Philosophumena, ascribed to Origen, vii. 30. 252. 15: Ἀλλὰ Ἐμπεδοκλῆς Μιῶνος, corrige Μέτωνος, Ἀκραγαντῖνος—Justin, Cohortatio ad Græcos, cap. 5. Opp. 9. D: Ἐμπεδοκλῆς Μέτωνος ὁ Ἀκραγαντῖνος—Cyrill, contra Julianum, ii. 67. B: Φασὶ γὰρ δὴ καὶ Ἐμπεδοκλέα τὸν Μέτωνος οὕτω τε διδάξαι.

Tzetzes, Chilias xii. 125. Histor. 399:

> Ὁ Μέτων Ἀθηναῖος ἦν, υἱὸς τοῦ Παυσανίου·
> ἦν ἐν Ὀλυμπιάδι δὲ ὀγδοηκονθεβδόμῃ.
> ἄριστος ἀστρολόγος δὲ τελῶν ὑπὲρ τοὺς πάντας,
> πάντων πρῶτος ὡς λέγουσι τῶν ἄλλων ἀστρολόγων
> περὶ ἁπάντων ἔγραψεν, ὡς ψεύδονται κἀνταῦθα,
> τὰς ἐννεακαιδεκετηρίδας τε καὶ δὴ καὶ ἄλλα.

Ol. lxxxvii. 1. corresponded to B. C. 432—so that the date here assigned him is correct.

r xii. 36. s Variæ, x. 7. v In voce. cf. Schol. ad Aves, 998.
t Page 185. supra. x Quære γεωμέτρης?

about his φυλὴ or tribe. If he was of Kolonus, he belonged to[y] Antiochis; if of Leuconoië, to Leontis[z]. The testimony of Phrynichus (if the Meton there mentioned was Meton the astronomer) seems to be decisive to the latter effect. Nor is it any objection that, when introduced in the Aves[a], it is as

Μέτων,
ὃν οἶδεν Ἑλλὰς χὠ Κολωνός—

for he was actually connected with Κολωνὸς also; though not as one of its δημόται, but by an astronomical monument, (probably a copy of his calendar) set up there, and by a κρήνη or spring which he had discovered or built up there *.

The fact however is still the same, that of his personal history, before or after his correction, little or nothing is known. His calendar was published B. C. 432; and 17 years after, (the date of the expedition to Sicily,) it appears from Plutarch[b], and Ælian[c], he was still alive, and living at Athens;

* It is to be observed however that there were two δῆμοι of the name of Κολωνὸς, one called the Ἵππιος, the other the Ἀγοραῖος. The former was in the country, about one mile from the city, Thucyd. viii. 67; the latter in the city. The former is better known at present; because the scene of Sophocles' drama of the Œdipus ἐπὶ Κολωνῷ was laid there. Schol. ad Œdip. Col. Arg. Secundum: Ἐπὶ δὲ τῷ λεγομένῳ Ἱππίῳ Κολωνῷ τὸ δρᾶμα κεῖται (cf. ad 56, 57. 60. 670. 887.) ἔστι γὰρ καὶ ἕτερος Κολωνὸς ἀγοραῖος πρὸς τῷ Εὐρυσακείῳ, πρὸς ᾧ οἱ μισθαρνοῦντες προεστήκεισαν, ὥστε καὶ τὴν παροιμίαν ἐπὶ τοῖς καθυστερίζουσι τῶν καιρῶν διαδοθῆναι·

Ὄψ' ἦλθες, ἀλλ' εἰς τὸν Κολωνὸν ἵεσο.

μνημονεύει τῶν δυεῖν Κολωνῶν Φερεκράτης ἐν Πετάλῃ διὰ τούτων·

Οὗτος πόθεν ἥκεις; εἰς Κολωνὸν ἱέμην
οὐ τὸν Ἀγοραῖον ἀλλὰ τὸν τῶν Ἱππέων.

Cf. Harpocration, Κολωναίτας: Hesychius, Κολωνός: Photii Lex. ὄψ' ἦλθες (367): Parœmiographi Græci, e cod. Bodl. 717. cf. e cod. Coislin. 397. ὄψ' ἦλθες κ, τ. λ. Etym. M. Κολωνός: Schol. ad Œdip. Col. 60. 711: Schol. ad Phœniss. 1707: in Æschin. 382. Contra Timarchum, 55. Κολωνῷ.

If Meton set up any thing in one of these Kolonuses, it was no doubt in the ἀγοραῖος—where there was the greatest resort, and which was in Athens itself.

[y] Cf. Smith's Geography, i. 333. No. 76.
[z] Ibid. No. 91: cf. Harpocration and Suidas in Λευκονοιεύς.

[a] Verse 997.
[b] Alkibiades, xvii.: Nikias, xiii.
[c] Variæ, xiii. 12.

and they both tell a story about the contrivance to which he in particular resorted in order to get excused from serving in that expedition: of the fate of which they attribute to him, even so long before, a presentiment, only too truly confirmed by the event. And the contrivance is said to have succeeded. The Aves of Aristophanes may be appealed to [c] to prove that he must have been still at Athens, at the date of that play, the Dionysia ἐν ἄστει, B. C. 414, the year after the expedition had sailed. Later than this we have not the means of tracing his history, and we may take our leave of it with one more observation; viz. that like other reformers Meton found his own countrymen the least disposed of his contemporaries to do justice to his discoveries; as they were not only slow in adopting his proposed correction of the calendar, but, if we may judge from the conduct of Aristophanes, who has introduced him into his *Aves*, as an astronomer and as a reformer, only to exhibit him in a ridiculous light, must have been inclined at first to treat both it and its author with indifference, if not with contempt. His contemporaries however, in other parts of Greece, perceived and acknowledged the value of his improvement.

Tenuit rem Græcia sollers
Protinus, et longos inventum misit in annos.

At Elis, and at Olympia, in particular, his Cycle appears to have been adopted from the first. It has been handed down traditionally that the name of the Golden Numbers (still in use for the different years of the Metonic Cycle which regulates the Ecclesiastical year of the Church) was originally applied to the several years of Meton's own Cycle, in consequence of its having been set up in letters of gold in the temple of Jupiter Olympius. Posterity at least, by the the honour in which they agreed to hold both the cycle of Meton and the memory of its author, made amends for the temporary slight and neglect which it experienced at the hands of his own countrymen.

SECTION III.—*On the* Παράπηγμα *of Meton, and the double Calendar, both Solar and Lunar, comprehended in it.*

The name which the Greeks give to such corrections as

[c] 992–1019.

this of Meton, is *Παράπηγμα*; and the sense of that term is properly that of a *Fixture*, an erection, a making secure, of some kind or other. The calendars of antiquity acquired this name from the way in which they were made public; viz. by being engraved on brass, or some other solid and durable material, and set up in a conspicuous situation where they might be read and consulted. Photius: *Παράπηγμα, κανόνα· καὶ εἶδός τι ὀργάνου ἀστρονομικοῦ*—Suidas, *Παράπηγμα· κανών· καὶ εἶδός τι ὀργάνου ἀστρονομικοῦ*: in both which definitions, the calendar, as denoted by the term, is explained by *κανών*. If Sophocles is to be believed, the author of the first *Παράπηγμα* among the Greeks must have been Palamedes—

> *Ἐφεῦρε δ' ἄστρων μέτρα καὶ περιστροφὰς,*
> *τάξεις τε ταύτας, οὐράνιά τε σήματα,*
> *ναῶν τε ποιμαντῆρσιν ἐνθαλασσίων*
> *ἄρκτου στροφάς τε, καὶ κυνὸς ψυχρὰν δύσιν*[f]—

though among the Egyptians there was a similar calendar, round the tomb of Osymandyas at Thebes, of which Diodorus has given an account[g], which, if really as old as it professed to be, was more ancient than any thing ascribed by Hellenic tradition to Palamedes. In like manner, Grecian tradition appears to have spoken of a Sphere, and possibly a Parapegma, of Chiron the Centaur, or Chiron the Thessalian[h], which too must have been older than Palamedes. A Sphere or Parapegma is attributed to Thales of Miletus, of which we hope hereafter to give an account; but to that it was peculiar to be adapted to the equable solar year, not to the Julian or to the lunar. The oldest calendar, answering to the above description, of the details of which any thing is known at present, is probably that of Democritus[i]; some of the dates of which have been preserved in the compilation of Geminus, and in the Apparentiæ of Ptolemy, and certain other monuments of antiquity, still extant. But the oldest *ἁπλῶς* would be that which Ælian has described[k], as the work of Œnopides of Chios, and as set up at Olympia; the date of which, we hope to shew hereafter, must have been

[f] Fragm. Ναύπλιος. 379.

[g] i. 49. cf. 81.

[h] Cf. our Fasti Catholici, iv. 134: iii. 384. 430. *n.*

[i] Diogenes Laertius, ix. cap. vii. xiii. 48. Μέγας ἐνιαυτὸς ἡ ἀστρονομίη· παράπηγμα. Cf. v. cap. ii. xiii. 43, Theophrastus: v. cap. i. xii. 26. Aristotle

[k] Variæ, x. 7.

B.C. 544: *Οἰνοπίδης ὁ Χῖος ἀστρολόγος ἀνέθηκεν ἐν Ὀλυμπίοις τὸ χαλκοῦν γραμματεῖον, ἐγγράψας ἐν αὐτῷ τὴν ἀστρολογίαν τῶν ἑνὸς δεόντων ἑξήκοντα ἐτῶν, φήσας τὸν μέγαν ἐνιαυτὸν εἶναι τοῦτον*: from which, and the allusion to it, as *τὸ χαλκοῦν γραμματεῖον*, we may infer it was still visible even in Ælian's time. He has a similar statement[k], with respect to Meton: *Ὅτι Μέτων ὁ Λάκων ἀστρολόγος ἀνέστησε στήλας καὶ τὰς τοῦ ἡλίου τροπὰς κατεγράψατο, καὶ τὸν μέγαν ἐνιαυτὸν ὡς ἔλεγεν εὗρεν, καὶ ἔφατο αὐτὸν (ὡς ἔλεγεν) ἑνὸς δέοντα εἴκοσιν ἐτῶν.* Whether these pillars too were erected at Olympia, he does not say, but he seems to imply it. No doubt in that case similar ones must have been set up at Athens, and in the Pnyx at Athens*. The Scholiast on Aratus[l] speaks of the erection of such *πίνακες* as a familiar practice with the astronomers; though he ascribes the origin of the custom to the example of Meton.

The parapegma of Meton however consisted of a double calendar, one solar and sidereal, the other lunar. The solar calendar being destined to serve as the standard of reference for the Lunar, he first directed his attention to that; and as, in order to an accurate solar calendar, the length of the solar, in the sense of the natural, year, is an indispensable preliminary, it was necessary he should begin with assuming some standard of that kind, as the basis of his superstructure. The length of the year is defined by the ancient astronomers as the interval of time between the departure of the sun from any given *σημεῖον*, or point of the ecliptic, and its return to it again: and though this is properly the definition of the mean sidereal year[m], they propose it as that of the tropical. *Ἔστι γὰρ ἐνιαύσιος χρόνος, ἐν ᾧ ὁ ἥλιος περιπορεύεται τὸν ζωδιακὸν κύκλον, καὶ ἀπὸ τοῦ αὐτοῦ σημείου ἐπὶ τὸ αὐτὸ σημεῖον ἀποκαθίσταται*[n]. It was indifferent what point this might be, provided it was always the same. But the points most generally assumed, agreeably to the reason of things, and to the constitutions of nature itself, were one or other of the four principal ones, in the

* Cf. supra p. 185.

k Variæ, x. 7.

l Ad Diosemeia, 20.

m See the Prolegomena premised to this Third Part of our Origines.

n Geminus, i, Uranologium, 2. B.

annus vertens, or tropical year[o]; the two equinoctial points, and the two tropical or solstitial ones, respectively*. Κατὰ δὲ τὴν παροῦσαν ἐπίσκεψιν, observes Ptolemy[p], πρὸς οὐδὲν ἄλλο ἡγούμεθα δεῖν ἀποβλέποντας τὸν ἐνιαύσιον τοῦ ἡλίου χρόνον σκοπεῖν, ἢ τὴν αὐτοῦ τοῦ ἡλίου πρὸς ἑαυτὸν, τουτέστι πρὸς τὸν γινόμενον ὑπ᾽ αὐτοῦ τὸν λοξὸν κύκλον, ἀποκατάστασιν, ὁρίζεσθαί τε τὸν ἐνιαύσιον χρόνον καθ᾽ ὃν ἀπό τινος ἀκινήτου σημείου τούτου τοῦ κύκλου κατὰ τὸ ἑξῆς ἐπὶ τὸ αὐτὸ παραγίνεται, μόνας ἀρχὰς οἰκείας τῆς τοιαύτης ἀποκαταστάσεως ἡγουμένους τὰ ὑπὸ τῶν τροπικῶν καὶ ἰσημερινῶν σημείων ἀφοριζόμενα σημεῖα τοῦ εἰρημένου κύκλου. Hipparchus expressed himself to the same effect: from one of whose works Ptolemy has quoted the following passage[q]: Συντέτακα δὲ καὶ περὶ τοῦ ἐνιαυσίου χρόνου ἐν βιβλίῳ ἑνὶ, ἐν ᾧ ἀποδεικνύω ὅτι ὁ καθ᾽ ἥλιον ἐνιαυτὸς, (τοῦτο δὲ γίνεται ὁ χρόνος ἐν ᾧ ὁ ἥλιος ἀπὸ τροπῆς ἐπὶ τὴν αὐτὴν τροπὴν παραγίνεται, ἢ ἀπὸ ἰσημερίας ἐπὶ τὴν αὐτὴν ἰσημερίαν,) περιέχει ἡμέρας τξε´ καὶ ἔλαττον ἢ δ´´ ἡμέρας τῷ τ´ῳ (τριακοσιοστῷ) ἔγγιστα μέρει μιᾶς ἡμέρας καὶ νυκτός. In like manner, Proclus Diadochus[r]: Πρὸς ταῦτα τοίνυν ὡς ἀκίνητα ποιούμενοι τὴν τήρησιν, εὑρίσκουσι τὸν χρόνον ἐν ᾧ ὁ ἥλιος ἀπὸ τοῦ αὐτοῦ σημείου ἐπὶ τὸ αὐτὸ παραγίνεται, οἷον ἀπὸ τροπῆς ἐπὶ τὴν αὐτὴν τροπὴν ἢ ἀπὸ ἰσημερίας ἐπὶ τὴν αὐτὴν ἰσημερίαν, τξ´ ἡμερῶν καὶ ε´ καὶ δ´ μιᾶς ἡμέρας παρὰ τριακοσιοστόν· τοῦτο γὰρ εἶναι τὸ ἀκριβές.

There is reason to conclude that Meton was employed on a series of observations of this kind, some time before the publication of his calendar; in which too he was assisted by a skilful observer, a contemporary, an Athenian Metœc,

* Censorinus, De Die, xix.: Annus vertens est natura dum sol percurrens duodecim signa eodem unde profectus est redit. hoc tempus quot dierum esset ad certum nondum astrologi reperire potuerunt. Cf. Hyginus, Poeticωn Astronomicωn, iv. 10—Ammianus Marcellinus, xxvi. ii. 70: Spatium anni vertentis id esse periti mundani motus et siderum definiunt veteres, inter quos Meton et Eucteinon et Hipparchus et Archimedes excellunt, cum sol perenni rerum sublimium lege polo percurso signifero quem zodiacum sermo Græcus adpellat, trecentis et sexaginta quinque diebus emensis et noctibus, ad eundem redierit cardinem: ut verbo tenus, si a secunda particula elatus arietis, ad eam dimensione redierit terminata.

[o] Cf. our Fasti Catholici, i. 71.

[p] Magna Compositio, Lib. iii. Cap. ii. Opp. i. 151.

[q] iii. ii. 164: cf. vii. ii. p. 13: iii. 15.

[r] Ptolemæi Opp. iv. 88. Hypotyposes.

called Phacinus. The high ground in the neighbourhood of Athens, particularly mount Lycabettus *, served for their observatory. Theophrastus, speaking of the facilities afforded by mountains for prognostics or observations of various kinds, has recorded that fact [s]: *Διὸ δεῖ προσέχειν οὗ ἄν τις ἱδρυμένος ᾖ· ἔστι γὰρ αἰεί τινα λαβεῖν τοιοῦτον γνώμονα· καὶ ἔστι σαφέστατα σημεῖα τὰ ἀπὸ τούτων. διὸ καὶ ἀγαθοὶ γεγένηνται κατὰ τόπους τινὰς ἀστρονόμοι ἔνιοι· οἷον Ματρικέτας ἐν Μηθύμνῃ ἀπὸ τοῦ Λεπετύμνου, καὶ Κλεόστρατος ἐν Τενέδῳ* [t] *ἀπὸ τῆς Ἴδης, καὶ Φαεινὸς Ἀθήνησιν ἀπὸ τοῦ Λυκαβηττοῦ τὰ περὶ τὰς τροπὰς συνεῖδε. παρ' οὗ Μέτων ἀκούσας τὸν τοῦ ἑνὸς δέοντα εἴκοσιν ἐνιαυτῶν (κύκλον) συνέταξεν. ἦν δὲ ὁ μὲν Φαεινὸς μέτοικος Ἀθήνησιν, ὁ δὲ Μέτων Ἀθηναῖος. καὶ ἄλλοι δὲ τοῦτον τὸν τρόπον ἠστρολόγησαν.* As for example, (so we learn from Philostratus [v],) Thales and Anaxagoras: *Ἀκούων..., τὸν μὲν Κλαζομένιον Ἀναξαγόραν ἀπὸ τοῦ κατὰ Ἰωνίαν κλίματος ἐπεσκέφθαι τὰ ἐν τῷ οὐρανῷ, Θαλῆν δὲ τὸν Μιλήσιον ἀπὸ τῆς προσήκου Μυκάλης.*

It thus appears that both Phacinus before Meton, and Meton after, or along with him, had been attending to the solstitial, rather than to the equinoctial points of the year. One reason of this might have been that, as the beginning of the civil calendar, both at Elis and at Athens, (and in

* Pliny, H. N. iv. 11: De Montibus Atticis: Brilessus, Ægialeus, Icarius, Hymettus, Lycabettus — Strabo, x. 2. (335 a): *Κυρίως μὲν γὰρ ἀκούων τις τὴν πόλιν δέξαιτ' ἄν, ὡς καὶ Ἀθήνας καὶ Λυκαβηττὸν εἴ τις λέγει, καὶ Ῥόδον καὶ Ἀτάβυριν, καὶ ἔτι Λακεδαίμονα καὶ Ταΰγετον.* This implies that Lycabettus was notoriously the highest mountain in Attica. Aristophanes, Ranæ, 1056.

> *Ἦν οὖν σὺ λέγῃς Λυκαβηττοὺς*
> *καὶ Παρνασῶν ἡμῖν μεγέθη, τοῦτ' ἐστὶ τὸ χρηστὰ διδάσκειν;*

Cf. the Scholia in loc., and Suidas, *Λυκαβηττὸς καὶ Παρνασός.* Hesychius, *Λυκαβηττός· ὄρος τῆς Ἀττικῆς, εἴρηται δὲ οὕτω διὰ τὸ λύκοις πληθύειν.* Cf. Phot. Lex. in voce. Xenophon, Œconomica, xix. 6, describes the soil about this mountain as dry: *Ξηρὰ μὲν γοῦν μοι δοκεῖ, ἔφην ἐγὼ, εἶναι ἡ περὶ τὸν Λυκαβηττὸν καὶ ἡ ταύτῃ ὁμοία, ὑγρὰ δὲ ἡ ἐν τῷ Φαληρικῷ ἕλει καὶ ἡ ταύτῃ ὁμοία.* According to Photius, Lycabettus produced the best oil, as mount Parnes did the best wine.

> Dives et Egaleos nemorum, Parnesque benignus
> Vitibus, et pingui melior Lycabessos oliva.
>
> Thebais, xii. 620.

[s] De Signis Pluviarum, vi. 783. § 3.

[t] Cf. supra, page 28.

[v] Apollonius, ii. ii. 60. A.

fact almost everywhere in Greece,) had long been fixed to the winter quarter, and very near the point of the winter solstice itself; they had long been accustomed to regard the solstitial, rather than the equinoctial points, as the proper commencement of the year. But why they should both have given the preference to the solstice of summer, rather than to that of winter, it would not be easy to say, unless they had previously conceived the design of making that for the future the beginning of the year, and consequently of transferring the head of the calendar from the winter solstice to the summer one.

There can be no doubt however, that in coming to this determination, and therefore directing his attention exclusively or principally to the summer solstitial point, Meton was rendering the attainment of his object, (an exact measure of the length of the tropical year,) so much the more difficult; the solstitial points being much less capable *a priori* of a precise definition from observation, unassisted by instruments, than the equinoctial. Hipparchus, a more accurate as well as a later observer than Meton, declared himself more than once unable to rely on his own observations of the solstices, or on those of others, within a considerable degree of the truth; while he could place confidence in those of the equinoxes: and in his work, *Περὶ τῆς μεταπτώσεως τῶν τροπικῶν καὶ ἰσημερινῶν σημείων*, Ἐκθέμενος τοπρῶτον, says Ptolemy[x], *τὰς δοκούσας αὐτῷ ἀκριβῶς καὶ ἐφεξῆς τετηρῆσθαι θερινάς τε καὶ χειμερινὰς τροπάς·* he continues, in his own words: Ἐκ *μὲν οὖν τούτων τῶν τηρήσεων δῆλον ὅτι μικραὶ παντάπασι γεγόνασιν αἱ τῶν ἐνιαυτῶν διαφοραί. ἀλλ' ἐπὶ μὲν τῶν τροπῶν οὐκ ἀπελπίζω καὶ ἡμᾶς καὶ τὸν Ἀρχιμήδη καὶ ἐν τῇ τηρήσει καὶ ἐν τῷ συλλογισμῷ διαμαρτάνειν καὶ ἕως τετάρτου μέρους ἡμέρας*, (the actual error was twice that amount at least.) *ἀκριβῶς δὲ δύναται κατανοεῖσθαι ἡ ἀνωμαλία τῶν ἐνιαυσίων χρόνων ἐπὶ τοῦ ἐν Ἀλεξανδρείᾳ κειμένου χαλκοῦ κρίκου, ἐν τῇ τετραγώνῳ καλουμένῃ στοᾷ, ὃς δοκεῖ διασημαίνειν τὴν ἰσημερινὴν ἡμέραν, ἐν ᾗ ἂν ἐκ τοῦ ἑτέρου μέρους ἄρχηται τὴν κοιλὴν ἐπιφάνειαν φωτίζεσθαι.*

Accordingly many equinoxes, both of spring and autumn, so determined, and in the judgment of modern astronomers

x iii. ii. 152: cf. 154–156.

with so much exactness as still to be available for any such purpose as requires the most ancient observations of that kind, Ptolemy proceeds to record, after Hipparchus[y].

The reason of this distinction is explained by Geminus[z]: *Αἱ μέντοιγε παραυξήσεις τῶν ἡμερῶν καὶ τῶν νυκτῶν οὐκ εἰσὶν ἐν πᾶσι τοῖς ζωδίοις ἴσαι. ἀλλὰ περὶ μὲν τὰ τροπικὰ σημεῖα μικραὶ παντελῶς καὶ ἀνεπαίσθητοι γίνονται· ὥστε σχεδὸν ἐφ᾽ ἡμέρας μ´ τὸ αὐτὸ μέγεθος τῶν ἡμερῶν καὶ τῶν νυκτῶν διαμένειν ... πρόδηλον δὲ τοῦτο καὶ ἐκ τῶν ὡρολογίων. τὸ γὰρ ἄκρον τῆς τοῦ γνώμονος σκιᾶς σχεδὸν ἐφ᾽ ἡμέρας μ´ ἐπιμένει ταῖς τροπικαῖς γραμμαῖς. περὶ δὲ τὰς ἰσημερίας ἑκατέρας μεγάλαι αἱ παραυξήσεις τῶν ἡμερῶν γίνονται, ὥστε τὴν ἐχομένην ἡμέραν τῆς προηγουμένης αἰσθητῶς παραλλάσσειν. δι᾽ ἣν αἰτίαν ἐν τοῖς ὡρολογίοις τὸ ἄκρον τῆς τοῦ γνώμονος σκιᾶς ἀπὸ τοῦ ἰσημερινοῦ κύκλου αἰσθητὰς καθ᾽ ἡμέραν τὰς ἀποστάσεις ποιεῖται—Ὁ γὰρ ἥλιος περὶ μὲν τοὺς τροπικοὺς κύκλους πολὺν ἐπιμένει χρόνον κατὰ τὴν πάροδον τὴν πρὸς αὐτοὺς καὶ τὴν ἀποχώρησιν. ὥστε σχεδὸν ἐφ᾽ ἡμέρας μ´ μένει πρὸς αἴσθησιν ἐπὶ τροπικῶν κύκλων*[a]—*Οὔτε γὰρ ἐν ὅλῳ τῷ Καρκίνῳ τροπαὶ γίνονται· ἀλλ᾽ ἔστιν ἕν τι σημεῖον λόγῳ θεωρητὸν ἐφ᾽ οὗ γενόμενος ὁ ἥλιος τὴν τροπὴν ποιεῖται· ἐν γὰρ στιγμιαίῳ χρόνῳ αἱ τροπαὶ γίνονται. τὸ δὲ ὅλον δωδεκατημόριον τοῦ Καρκίνου ὁμοίως κεῖται τοῖς Διδύμοις .... δι᾽ ἣν αἰτίαν καὶ τὰ μεγέθη τῶν ἡμερῶν καὶ νυκτῶν ἴσα ἐστὶν ἐν Διδύμοις καὶ ἐν Καρκίνῳ, καὶ ἐν τοῖς ὡροσκοπείοις αἱ ὑπὸ τῶν γνωμόνων γραφόμεναι γραμμαὶ ἴσον ἀπέχουσι τοῦ θερινοῦ τροπικοῦ σημείου ἐν Καρκίνῳ καὶ ἐν Διδύμοις*[b]. In short, the rate of the increment or of the decrement daily at the equinoxes was reckoned ninety times as great as that which was observable about the tropics[c].

It is not to be supposed then that Meton would have decided to make the summer solstice the epoch of his correction, and thereby subject himself to the preliminary determination of a point so nice and difficult as this, without

[y] Cf. our Fasti Catholici, ii. 409.

[z] Cap. v. Uranologium, 25. C. E.

[a] Cap. xiii. Uranolog. 54. E: cf. xiv. 59. A.

[b] Cap. i. Uranolog. 10. D.

[c] v. Uranologium, 26. C. Cf. Strabo, ii. i. 122. De Hipparcho: *Τὸ μὲν οὖν κατὰ Μερόην κλίμα, Φίλωνά τε τὸν συγγράψαντα τὸν εἰς Αἰθιοπίαν πλοῦν ἱστορεῖν ὅτι πρὸ πέντε καὶ τεσσαράκοντα ἡμερῶν τῆς θερινῆς τροπῆς κατὰ κορυφὴν γίνεται ὁ ἥλιος*; and no doubt 45 days after; 90 in all. The true reason of the distinction, drawn in the text, is the fact that at the equinoxes the sun's declination increases or diminishes largely and sensibly every day, at the solstices, slightly and almost insensibly; and it is the difference of declination which for a given Latitude makes the difference in the length of the day.

some cogent reason. And in addition to the motive which has just been assigned (the prejudice most likely at this time to influence the Greek astronomers every where, and to make them regard either the winter or the summer solstice as the most proper beginning of the year), another might be the authority of Egypt, (which was still looked up to by the Greeks as the centre and source of knowledge of every kind, and especially of astronomical science,) where, it was well known to Meton and his contemporaries, there was a very ancient form of the year, which had always been attached to the season of midsummer. But the true reason, and that which would weigh most both with him and with his colleague, Phaeinus of Elis, we make no doubt was the old and prescriptive rule of the Olympic Games; which before the correction of Solon had been attached to a date nearly the same with the summer solstice in Meton's time, yet, according to the actual rule of their administration in the Octaëteric cycle, whether of Athens or of Olympia, were now liable to advance a month at least, on that natural term. The civil calendar having long been lunar, and at this very time being still lunar; the problem, which had yet to be solved was that of the contrivance of a form of the year, in which, without altering the name or nature of the civil calendar in general, the old and primitive rule of the Olympic games might be as capable of observance as at first; and neither the season of the festival in general, nor the days in particular, beyond certain fixed and prescribed limits, vary from midsummer. *This* was the problem which Meton was proposing to solve; beginning with as exact a determination of the solstitial point as the means and facilities at his command rendered possible for him.

SECTION IV.—*On the date of the Solstice of Meton.*

The actual observation of the summer solstice, made at this time, and probably with this object in view, was the oldest known to the Greek astronomers. Ptolemy remarks upon it[d]: Ἕνεκεν μὲν οὖν παλαιότητος, αἵ τε ὑπὸ τῶν περὶ τὸν Μέτωνα καὶ Εὐκτήμονα τετηρημέναι θεριναὶ τροπαὶ, καὶ αἱ μετὰ

[d] Magna Comp. iii ii. Opp. i. 160.

τούτους ὑπὸ τῶν περὶ Ἀρίσταρχον, ὀφείλοιεν ἂν εἰς τὴν σύγκρισιν τῶν καθ' ἡμᾶς γεγενημένων παραλαμβάνεσθαι: and if he declines this comparison here it is only from a distrust of the accuracy of *these* observations, partly because of the well known uncertainty of solstitial observations in general, and partly because of the imperfect manner in which these in particular had been made: *Ἕνεκεν δὲ τοῦ καθόλου τε τὰς τῶν τροπῶν τηρήσεις δυσδιακρίτους εἶναι, καὶ πρὸς τούτοις τὰς ὑπ' ἐκείνων παραδεδομένας ὁλοσχερέστατον εἰλημμένας, ὡς καὶ τῷ Ἱππάρχῳ δοκεῖ, φαίνεσθαι, ταύτας μὲν παρῃτησάμεθα κ', τ. λ.*

And yet the antiquity, and so far the importance, of this solstice in particular, induced him to compare it after all with those of his own time; and in the sequel of the passage just quoted, he goes on (probably after Hipparchus[e]), *Κἂν πρὸς τὴν ὑπὸ τῶν περὶ Μέτωνά τε καὶ Εὐκτήμονα τετηρημένην θερινὴν τροπὴν, ὡς ὁλοσχερέστατον ἀναγεγραμμένην, τὴν σύγκρισιν παλαιότητος ἕνεκεν ποιησώμεθα, τῆς ὑφ' ἡμῶν ὡς ἔνι μάλιστα ἀδιστάκτως ἐπιλελογισμένης, τὸ αὐτὸ τοῦτο εὑρήσομεν.* And this leads him to assign its date. *Ἐκείνη μὲν γὰρ ἀναγράφεται γεγενημένη ἐπὶ Ἀψεύδους ἄρχοντος Ἀθήνησι, κατ' Αἰγυπτίους Φαμενὼθ κα' πρωΐας.* The Egyptian date of the observation, in terms of the day, is thus given; but not in terms of the year. But the name of the archon at Athens for the time being assigned, (in which both the scholiast on the Aves, as we have seen[f], and Diodorus Siculus, as we hope to see, are agreed,) the year must have been that which answered, in the æra of Nabonassar or that of Philip, to the archontic year of Apseudes; and that could have been only Nab. 316, whether the year of Apseudes itself is dated Hecatombæon 1, B. C. 433, or Gamelion 1, B. C. 432.

The time of the day too, here designated by *πρωΐας*, is specified shortly after by *περὶ τὴν ἀρχὴν τῆς ἡμέρας*: *Ἐὰν ἡ ὑπὸ τῶν περὶ Εὐκτήμονα τετηρημένη θερινὴ τροπὴ περὶ τὴν ἀρχὴν τῆς τοῦ Φαμενὼθ κα' ᾖ γεγενημένη*[ff]. Now for the parallel of Athens the ancients reckoned the elevation of the pole to be 37°, and the length of the longest day 14 hours 36 min. of equinoctial time[g]; both which were very near the truth.

[e] Loc. cit. p. 162.
[f] Supra, p. 185. [ff] 163.
[g] Cf. Scholia ad Aratum, 497: Hipparchus, in Aratum Comment. v. Uranologium, i. 179 D–E: vi. 181 B–C: xvii. 193 C.

At the summer solstice then the sun would rise for the latitude of Athens, about 4.12 A. M. mean time: and the mean point between dawn of day and sunrise being assumed as most properly meant by πρωΐας; the date of this solstice ἐπὶ Ἀψεύδους comes out Nab. 316, Phamenoth 21 circa 4 A. M. mean time. Hence we get the corresponding Julian term as follows:—

B. C.		h.	m.		Nab.		h.	m.	
433	Dec. 9	0	0	noon =	316	Thoth 1	0	0	noon.
	Add 199	16	0			Add 199	16	0	
	208	16	0			200	16	0	
Cast off 182					Cast off 180				

B. C.			Nab.	
432	June 26 16 h. from noon	=	316	Phamenoth 20 16 h. from noon.
	June 27 4 h. A. M.	=		Phamenoth 21 at 10 hours from sunset.

The date of the observation therefore in the Julian reckoning, was June 27 *circa* 4 A. M., B. C. 432; in the Egyptian, Phamenoth 20 at 16 hours from noon, Phamenoth 21 at 10 hours from sunset [h], Nab. 316. It included consequently an error of defect, of not less than 32 hours; for the true summer solstice, for the meridian of Athens, B. C. 432, could not have happened earlier than June 28 at 12 hours from midnight; and according to Mr. Ideler, happened June 28 at 4 P. M.*

* There are other references in the Magna Compositio to this same solstice; which it may not be amiss to bring together here.

i. Lib. iii. Cap. ii. Opp. i. 161–163.

Solstice of Ptolemy, Antonini 3.	A. D. 139–140.	Nab. 887
Solstice of Meton,	B. C. 432	— 316
	Interval, in years of	Nab. 571

which is reckoned equivalent to a recession of 140 days + $\frac{1}{2}$ + $\frac{1}{3}$ of a day more, i. e. 20 hours. Hence—

					h.	m.
B. C. 432	Nab. 316	Solstice of Meton,	Phamenoth	21	10	0
	Add 571		Add	140	20	0
				162	6	0
			Cast off	150		
A. D. 140	Nab. 887	Solstice of Ptolemy,	Mesore	12	6	0

h Of these dates of Ptolemy and the mode of understanding them, see our Fasti Catholici, i. 155 sqq. Cf. ii. 409.

That is, Mesore 12 at 6 hours from sunset. Cf. 162, where it is dated accordingly: and iii. iv. 185: Phil. 463. (=Nab. 887, A. D. 140.) *Τῇ ιαʹ τοῦ Μεσορῇ μετὰ τὸ εἰς τὴν ιβʹ μεσονύκτιον*: Mesore 11 at 12 h. by Ptolemy's reckoning (from noon), Mesore 12 at 6 h. from sunset, by the common reckoning. The Julian date we obtain as follows:—

A. D.			h.	m.		Nab.			h.	m.	
139	July	20	0	0	from noon =	887	Thoth	1	0	0	from noon.
	Add	340	12	0			Add	340	12	0	
		360	12	0				341	12	0	
	Cast off	336					Cast off	330			

A. D. 140 June 24 12 h. = Nab. 887 Mesore 11 12 h.
i. e. June 25 at midnight. Mesore 12 at midnight.

And that this solstice in the common reckoning was to be dated Mesore 12 at midnight may be further collected from iii. iv. 184, 185, where the interval from the autumnal equinox, as ascertained by Ptolemy, Athyr 9, *μετὰ τὴν τοῦ ἡλίου ἀνατολὴν* (A. D. 139) to the vernal equinox next ensuing, Pachon 7 *μετὰ τὴν μεσημβρίαν* (A. D. 140), is reckoned at 178 days 6 hours. Hence,

		h.	
A. D. 139 autumnal equinox of Ptolemy, Athyr	9	6	A. M.
Add	178	6	
	187	12	or noon.
Cast off	180		
A. D. 140 vernal equinox of Ptolemy, Pachon	7	12	or noon = 0.
Add for the length of the spring quarter according to Ptolemy, p. 185	94	12	
	101	12	
Cast off	90		

A. D. 140 Summer solstice of Ptolemy, Mesore 11 12 h. from noon.
Mesore 12 at 6 h. from sunset.

It is to be observed that iii. ii. 162 supra, the text of Ptolemy, as it stands at present, in the definition of the date of this solstice, Philipp. 463, Nab. 887, *τῇ ι̅α̅ τοῦ Μεσορῇ μετὰ β̅ ὥρας, ἐγγὺς τοῦ εἰς τὴν ιβ μεσονυκτίου* is in error, for *μετὰ ιβʹ ὥρας*—12 hours reckoned from noon, 6 hours reckoned from sunset.

It appears from the same place of the Magna Compositio (iii. ii. 162.) that Hipparchus reckoned the interval in years between this solstice of Meton, *ἐπὶ Ἀψεύδους*, and the solstice of Aristarchus, Per. Call. i. 50 *exeunte,* 152 years. This latter year corresponded to midsummer, B. C. 280. Reckon back from that 152 years, and you come to midsummer, B. C. 432.

SECTION V.—*On the date of the Solstice of Meton in the Civil Calendar of the time being.*

Attic Calendar, Period ii. *Cycle* i. 1. *B. C.* 432.

Month.	Days	Midn.	Month.	Days.	Midn.
i. Gamelion	29 ..	Jan. 19	vii. Hecatombæon	29 ..	July 15
ii. Anthesterion	30 ..	Feb. 17	viii. Metageitnion	30 ..	Aug. 13
iii. Elaphebolion	29 ..	Mar. 19	ix. Boëdromion	29 ..	Sept. 12
iv. Munychion	30 ..	April 17	x. Pyanepsion	30 ..	Oct. 11
v. Thargelion	29 ..	May 17	xi. Mæmacterion	29 ..	Nov. 10
vi. Skirrhophorion	30 ..	June 15	xii. Posideon	30 ..	Dec. 9

Let us now turn to the date of this same observation in the Attic calendar, which also has been recorded. Ἐν δὲ ταῖς Ἀθήναις, says Diodorus[i], Μέτων, ὁ Πανσανίου μὲν υἱὸς δεδοξασμένος δὲ ἐν ἀστρολογίᾳ, ἐξέθηκε τὴν ὀνομαζομένην ἐννεακαιδεκαετηρίδα, τὴν ἀρχὴν ποιησάμενος ἀπὸ μηνὸς ἐν Ἀθήναις Σκιροφοριῶνος τρισκαιδεκάτης. ἐν δὲ τοῖς εἰρημένοις ἔτεσι τὰ ἄστρα τὴν ἀποκατάστασιν ποιεῖται, καὶ καθάπερ ἐνιαυτοῦ τινος μεγάλου τὸν ἀνακυκλισμὸν λαμβάνει· διὸ καί τινες αὐτὸν Μέτωνος ἐνιαυτὸν ὀνομάζουσι. δοκεῖ δὲ ὁ ἀνὴρ οὗτος ἐν τῇ προρρήσει καὶ προγραφῇ ταύτῃ θαυμαστῶς ἐπιτετευχέναι. τὰ γὰρ ἄστρα τήν τε κίνησιν καὶ τὰς ἐπισημασίας ποιεῖται συμφώνως τῇ γραφῇ. διὸ μέχρι τῶν καθ' ἡμᾶς χρόνων οἱ πλεῖστοι τῶν Ἑλλήνων χρώμενοι τῇ ἐννεακαιδεκαετηρίδι οὐ διαψεύδονται τῆς ἀληθείας.

It has been inferred from these words that the Lunar epoch of the Correction of Meton was taken from the 13th of Skirrhophorion for the time being. But though such a contingency, as the coincidence of the *first* of the mean or true lunar month with the *thirteenth* of the civil in the old octaëteric correction, *a priori* was very possible; it is manifest that to suppose Diodorus to have been speaking here of the Lunar Calendar of Meton, properly so called, and of its primary date, is to mistake his meaning. It is clear from the context, that what he was really speaking of, was the Solar Parapegma of Meton; the calendar, in which the entrance of the sun into the different signs, the risings and settings of

i xii. 36. De Anno a C. N. 432.

the principal stars through every month in the year, and the symptoms, affections, or changes of the weather supposed to accompany each, were all noted, and laid down respectively. The calendar, here described, is that of which we have still a facsimile (a specimen at least) in the compilation of Geminus, in the Apparentiæ of Ptolemy, in the Calendar of Claudius the Tuscan, in the Fasti of Ovid, in Pliny, in Joannes Lydus: the same in short which Columella transferred, more or less entire, to his own Rustic Calendar, from the Greek of Meton. Nec me fallit Hipparchi ratio, quæ docet solstitia et æquinoctia non octavis sed primis partibus signorum[k] confici. verum in hac ruris disciplina sequor nunc Eudoxi et Metonis antiquorumque fastus astrologorum, qui sunt aptati publicis sacrificiis: quia et notior est illa vetus agricolis concepta opinio; nec tamen Hipparchi subtilitas pinguioribus ut aiunt rusticorum litteris necessaria est[l].

This distinction is confirmed by the testimony of the calendar itself, as still in use at the time of the Metonic Correction: for we have only to look at the scheme of this calendar, premised to the present section, to see that Skirrhophorion 13 was falling on June 27, Meton's date of the summer solstice. The solar calendar of Meton (under which his sidereal also must be comprehended) had its proper beginning, and its proper termination, every year, each a fixed and invariable term; the former the first day of Karkinon, the latter the last day of Didymon; the former in the first year of his cycle, June 27, the latter June 26. His lunar calendar had its proper beginning and its proper termination too; but these could never be the same with those of the solar, except in the first and the last years of the cycle.

This distinction of the solar and the lunar epoch of the cycle of Meton may be further illustrated by what Ptolemy proceeds to relate, after Hipparchus, of an observation of the summer solstice by the latter, compared with one before him, of Aristarchus; and of this of Aristarchus, compared with that of Meton, older than both[m]: Ἔν τε γὰρ τῷ περὶ ἐνιαυσίου

[k] For the true explanation of this distinction, and what Hipparchus really meant by it, see our Origines Kalendariæ Italicæ, iv. 165 sqq. note.

[l] De Re Rustica, ix. xiv. § 12.

[m] Magna Compositio, iii. ii. Opp. i. p. 163. cf. 162 *ad calc.*

μεγέθους (*βιβλίῳ*) *συγκρίνας τὴν ὑπὸ Ἀριστάρχου τετηρημένην θερινὴν τροπὴν τῷ ν΄ ἔτει λήγοντι τῆς πρώτης κατὰ Κάλιππον περιόδου τῇ ὑφ' ἑαυτοῦ πάλιν ἀκριβῶς εἰλημμένῃ τῷ μγ΄ ἔτει λήγοντι τῆς τρίτης κατὰ Κάλιππον περιόδου, φησὶν οὕτως· Δῆλον τοίνυν ὅτι ἐν τοῖς ρ̅μ̅ε̅ ἔτεσιν τάχιον γέγονεν ἡ τροπὴ τῆς κατὰ τὸ δ΄ ἐπουσίας τῷ ἡμίσει τοῦ συναμφοτέρου ἐξ ἡμέρας καὶ νυκτὸς χρόνου*: the meaning of which is that the solstice, observed by Hipparchus Per. Cal. iii. 43 *exeunte*, anticipated *twelve* hours on the solstice observed by Aristarchus Per. Cal. i. 50 *exeunte*, 145 years before.

Now it appears [m] that this solstice of Hipparchus was just 94 d. 12 h. later than the vernal equinox, determined before, the same year [n]; Mecheir 29 *μετὰ τὸ μεσονύκτιον τὸ εἰς τὴν λ΄* [o], Per. Cal. iii. 43: i. e. Mecheir 30 Nab. 613, at 6 hours from sunset, March 24. 0.0 a. m. B. C. 135 [p]. We have then

				h.	m.	
B. C. 135	Vernal Equinox		March 24	0	0	a. m.
		Add	94	12		
			118	12	0	
		Cast off	92			
B. C. 135	S. Solstice of Hipparchus		June 26	12	0	
+ 145		Add	0	12		
B. C. 280	S. Solstice of Aristarchus		June 27	0	0	a. m.

The distance of time between this last and Meton's B. C. 432, June 27. 4.0 a. m. was specified immediately after the date of Meton's [q]; *Καὶ ἔστι τὰ μὲν ἀπὸ τῆς ἐπὶ τοῦ Ἀψεύδους ἀναγεγραμμένης θερινῆς τροπῆς μέχρι τῆς ὑπὸ τῶν περὶ Ἀρίσταρχον τετηρημένης τῷ ν΄ ἔτει τῆς πρώτης κατὰ Κάλιππον περιόδου, καθὼς καὶ ὁ Ἵππαρχός φησιν, ἔτη ρ̅ν̅β̅*: and that was the interval from June 27. 4.0 a. m. B. C. 432 to June 27. 0.0 a. m. B. C. 280. Ptolemy adds that the same year of the first Callippic Period was the 44th of the æra of Philip: i. e. the epoch of that æra being Nab. 425 [r], it was Nab. 468, Nov. 1 B.C. 281—Nov. 1 B. C. 280 [s].

[m] Magna Compositio, iii. iv. 184.

[n] iii. ii. 154.

[o] Cf. our Fasti Catholici, i. 160. note.

[p] Cf. Ibid. ii. 409. Vernal Equinoxes, ii.

[q] iii. ii. 162.

[r] Of this æra, and of that of Nabonassar, see the Introduction to the Tables of the Fasti Catholici, Part i. Ch. ii. sect. iv. page 11: and Ch. iv. sect. iii. sqq. 49. cf. the Fasti Catholici, ii. 397 sqq.

[s] Cf. Magna Compos. iii. ii. 162, 163.

Now by our perpetual cycle of the lunar calendar of Callippus[t], we have

Period i. 50	B. C. 281	June 27	at midnight.
	B. C. 280	June 16	at midnight.
Period iii. 43	B. C. 136	June 15	at midnight.
	B. C. 135	July 4	at midnight.

If then the date of each of these observations, (the first of them Per. i. 50 *exeunte*, the second Per. iii. 43 *exeunte*.) is referred alike to this lunar calendar; the first must have been made *before* June 16 B. C. 280, the latter *before* July 4 B. C. 135: and though that would be true of the later one, the date of which was June 26 at noon, B. C. 135, it would not be true of the earlier, the date of which was June 27 at midnight, B. C. 280. Either then this latter must have been made in the 50th year of the Period *ineunte*, not *exeunte*, or the Period itself and every year therein must have had a fixed solar epoch, June 27 or 26; as well as a lunar one, which was different for different years of the cycle, within certain limits. No doubt this was the real state of the case. And what thus held good of the respective epochs of the solar and lunar Parapegma of Callippus, *mutatis mutandis*, held good of those of the Parapegma of Meton also.

Section VI.—*On the divisions of the Solar Calendar of Meton.*

It was this solar Calendar of Meton's, with the ingresses into the signs, (i. e. the celestial months,) the seasons of the year, distinguished and divided thereby, the risings and settings of the stars, and the various ἐπισημασίαι connected with all these phenomena, to which Aratus alluded in the following of his Diosemeia[v]—

Ἄκρα γε μὴν νυκτῶν κεῖναι δυοκαίδεκα μοῖραι
ἄρκιαι ἐξειπεῖν· τὰ δέ που μέγαν εἰς ἐνιαυτὸν,
ὥρη μέν τ' ἀρόσαι νειοὺς ὥρη δὲ φυτεῦσαι,
ἐκ Διὸς ἤδη πάντα πεφασμένα πάντοθι κεῖται.
καὶ μέν τις καὶ νηῒ πολυκλύστου χειμῶνος
ἐφράσατ', ἢ δεινοῦ μεμνημένος Ἀρκτούροιο,
ἠὲ τέων ἄλλων οἵ τ' ὠκεανοῦ ἀρύονται
ἀστέρες ἀμφιλύκης, οἵ τε πρώτης ἔτι νυκτός.
ἤτοι γὰρ τοὺς πάντας ἀμείβεται εἰς ἐνιαυτὸν
ἠέλιος μέγαν ὄγμον ἐλαύνων, ἄλλοτε δ' ἄλλῳ

[t] See vol. iii. Appendix, Table viii. [v] Verse 8.

ἐμπελάσει, τότε μέν τ' ἀνιὼν τότε δ' αὐτίκα δύνων·
ἄλλος δ' ἀλλοίην ἀστὴρ ἐπιδέρκεται ἠῶ.
γινώσκεις τάδε καὶ σύ· τὰ γὰρ συναείδεται ἤδη
ἐννεακαίδεκα κύκλα φαεινοῦ ἠελίοιο,
ὅσσα τ' ἀπὸ ζώνης εἰς ἔσχατον Ὠρίωνα
νὺξ ἐπιδινεῖται, Κύνα τε θρασὺν Ὠρίωνος.

The Scholiast observes on this passage[x]: *Μέτων τις γέγονε παλαιὸς ἀστρονόμος. ὃς ἀκριβῶς ἀριθμήσας εἶπε μικρὸν ἐνιαυτὸν, ὡς πρὸς σύγκρισιν τοῦ μέγαλου περὶ οὗ πρότερον εἴπομεν*[y], *ἤγουν ὅταν σύνοδος γένηται τῶν ζ' ἀστέρων*[z] *ἐπὶ ἀπωλείᾳ τοῦ παντός. οἱ δὲ μετὰ Μέτωνα ἀστρονόμοι καὶ πίνακας ἐν ταῖς πόλεσιν ἔθηκαν, περι τῶν τοῦ ἡλίου περιφορῶν τῶν ἐννεακαιδεκαετηρίδων, ὅτι καθ' ἕκαστον ἐνιαυτὸν τοιόσδε ἔσται χειμὼν καὶ τοιόνδε ἔαρ καὶ τοιόνδε θέρος καὶ τοιόνδε φθινόπωρον, καὶ τοιοῖδε ἄνεμοι, καὶ πολλὰ πρὸς βιωφελεῖς χρείας τοῖς ἀνθρώποις. ἐπειδὴ οὖν ἤδη ταῦτα ἐγνώσθη ἐκ τῶν πινάκων, καὶ αὐτὸς ἐκεῖθεν ἔγνω τὰ πολλὰ ὁ Ἄρατος, φησὶν ὅτι καὶ αὐτὸς γινώσκεις αὐτά. πάλαι γὰρ ἀείδεται κ', τ. λ. ἐδέξαντο δὲ αὐτὰ Ἕλληνες παρ' Αἰγυπτίων καὶ Χαλδαίων*[z]. He adds[a], *Ὅσα, φησὶν, ἔμαθες ἀπὸ τῶν παλαιοτέρων, ἀπὸ τῆς ζώνης τοῦ Ὠρίωνος πάλιν εἰς αὐτὸν τὸν Ὠρίωνα . . . . προεῖπον γὰρ περὶ τῶν ἄλλων οἱ πρὸ Ἀράτου Εὔδοξός τε καὶ Ἵππάρχος καὶ ἄλλοι τινές. ἤρξαντο δὲ ἀπὸ Ὠρίωνος, ὅτι ὑπόκειται Καρκίνῳ, καὶ ὅτι μάλιστα εἰς αὐτὸν οἱ πλέοντες ὁρῶσι, καὶ ὅτι νότιός ἐστιν . . . . ἀρχὴ δὲ τοῦ ἐνιαυτοῦ ἐστιν ἡ τῆς ζώνης τοῦ Ὠρίωνος ἐπιτολὴ, τέλος δὲ τῶν ποδῶν αὐτοῦ ἡ ἐπιτολὴ καὶ τοῦ Κυνός.*

In supposing Hipparchus more ancient than Aratus, this comment was much mistaken[b]: though as to Eudoxus, he was certainly older than Aratus, and Aratus' own description of the sphere merely versified the phænomena of Eudoxus[c]. The sphere of Eudoxus and that of Aratus began at the summer solstice, and in the sign of Cancer, though not with the same point of Cancer[d]. Hence Festus Avienus, De Jove[dd]—

Hic primum Cnidii radium senis intulit astris,
Mortalemque loqui docuit convexa deorum :
Cur Hyperionios Nepa circumflecteret ignes—

[x] Ad v. 20.
[y] Cf. ad Phæn. 458.
[z] Cf. Schol. Mosq. pag. 330, 331.
[a] Ad v. 22.
[b] Yet cf. ad Phaenomena, 83. 240 : (Cod. Mosq. p. 275. 282.) where the same anachronism is repeated.
[c] Cf. on this subject our F. Catholici, iv. 131 sqq.
[d] Cf. our Fasti Catholici, iv. 136.
[dd] l. 53. p. 123.

Because Eudoxus' description of the sphere began at the Tropic of Cancer. In the Vita Arati[e], it is observed that the sphere of Aratus set out with Cancer rising in the east, Capricorn setting in the west, and Aries on the meridian[f]. Hence it is too, that Aratus himself, intending his description to apply to the parallel of Macedonia, (where the longest day was 15 hours, and the shortest night was 9[g],) divides the ecliptic into eight parts, in such a proportion, that at the summer solstice five of them passed over the meridian by day, and three by night, i. e. each was three hours long; and the longest day so measured was 15 hours, the shortest night was 9. After giving the Ecliptic too the name of the Zodiac, the first sign which he mentions is Cancer[h], the next is Leo, and so on; which makes the Scholiast ask, *Διατί δὲ ἀπὸ τοῦ Καρκίνου ἤρξατο*; contrary to the practice of the Egyptians, who began the reckoning of the signs from Aries[i]. Hyginus also observes[k], Sed Aratus non ut reliqui astrologi ab Ariete duodecim signa demonstrat, hoc est, vere incipiente, sed a Cancro, hoc est ipsa æstate.

That Aratus followed the arrangements of the sphere of Eudoxus, was shewn in the first part of these Origines[l]; and according to his distribution thereof, if we begin with such of the stars as would be the first to rise for the parallel of Attica, at or just after the summer solstice, and end with the last to do so, (i. e. follow the natural order of all, or the chief, of the phenomena of this kind, from the same fixed Julian term, June 27, to the same again,) the first such phenomenon would be the rising of the Belt, Cingulum, or *Ζώνη*, of Orion; which Ptolemy, in his Apparentiæ, for the epoch of A. D. 138 or 139[m], and the parallel of $14\frac{1}{2}$ hours, dated July 5: the last would be that of the star preceding it—the star on the foreshoulder—which Ptolemy under the same circumstances dated Pauni 24, Euctemon, in Geminus, Didymon 24, both June 18 or 19. This is what Aratus must have meant

[e] Prima, (Buhlii) pag. 434.

[f] Cf. our Fasti Cathol. iii. 458 note.

[g] Phænomena, 497 sqq. 507 sqq. and the Scholia in loc.: Achilles Tatius, Isagoge 24. 148 B: 35. 159 E. Also Geminus, iv. Uranolog. 16 D.

[h] Phæn. 544–550.

[i] Cf. ad Phæn. 550 sq: 569 sqq. and the Scholia: cf. also our F. Catholici, ii. 71: iii. 283.

[k] Astronomicωn Poëticωn iv. 5.

[l] Vol. iv. 135 sqq. cf. Achilles Tatius Isagoge, cap. 24: Uranologium, 148 B. –149 B. 159 C.

[m] Cf. our Fasti Catholici, iii. 243.

in the concluding lines of the above passage, and the Scholiast in his comment upon them: and this is what Festus Avienus also implied in the lines quoted supra[n]—

> Sed primæva Meton exordia sumpsit in anno
> Torreret rutilo cum Phœbus sidere Cancrum,
> Cingula cum veheret pelagus procul Orionis,
> Et cum cæruleo flagraret Sirius astro.

The actual date indeed of the heliacal rising of the zone of Orion, according to Meton or Euctemon, at present is not on record. Mr. Ideler however has calculated it for their time, to July 6, in the ninth degree of Cancer, which is very near to Ptolemy's, for the parallel of 14½, Epiphi 11, July 5 or 6; though if this was its true date in Ptolemy's time for that latitude, it ought to have been three days earlier for the time of Meton and Euctemon. We have seen reason ourselves to conclude[o] that the popular date of the phenomenon, in Hesiod's time, and for the latitude of Ascra, was June 27; and if that was the case in his time, it would be still the same in that of Meton. There is reason to believe that the date of this phenomenon in some of the spheres of antiquity, and possibly in Meton's, was even June 27 itself. June 26 was the date assigned it in the calendar of Cæsar, according to Pliny[p]; and that too is the date assigned both to it and to the summer solstice by Ovid[q]—

> Ecce suburbana rediens male sobrius æde
> Ad stellas aliquis talia verba jacit.
> Zona latet tua nunc et cras fortasse latebit,
> Dehinc erit Orion! adspicienda mihi.
> Et si non esset potus dixisset eadem
> Venturum tempus solstitiale die.

Section VII.—*On the standard of the Solar year assumed by Meton.*

The standard of the solar, in the sense of the tropical, year assumed by Meton, is known from testimony: and first, from that of Hipparchus. Πάλιν τε καὶ ἐν τῷ περὶ ἐμβολίμων μηνῶν τε καὶ ἡμερῶν, says Ptolemy[r], speaking of Hipparchus,

[n] Page 180.
[o] Supra, page 283 note.
[p] H. N. xviii. 68. 2. pag. 228.
[q] Fasti, vi. 785. That he is speaking of June 26, see 791. 795. 797: cf. also the Venusine Kalendar, apud Foggini, ad vi. Kal. Julias.
[r] Magna Compos. iii. ii. 163, 164.

προειπὼν ὅτι, κατὰ μὲν τοὺς περὶ Μέτωνα καὶ Εὐκτήμονα, ὁ ἐνιαύσιος χρόνος περιέχει ἡμέρας τξε δ′ καὶ οϛ″ μιᾶς ἡμέρας, κατὰ δὲ Κάλιππον ἡμέρας τξε δ′ μόνον, ἐπιλέγει κατὰ λέξιν οὕτως·κ`, τ. λ. that is, he proceeded to subjoin his own standard of the same kind, 365 days and $\frac{1}{4}$, minus the 300th part of 24 hours, i. e. minus 4m. 48s. exactly *.

The standard of Meton consequently was 365 days 6 hours $+\frac{1}{76}$ of 24h. = 18m. 56.8421s. or 18m. 56s. 50ths. 31·56fths. that of Callippus, 365$\frac{1}{4}$ d., that of Hipparchus, (adopted by Ptolemy) was $365\frac{1}{4}-\frac{24}{300}$ d. That is,

The first was	..	..	365d. 6h. 18m. 56·8421s.
The second ..	..	..	365d. 6h.
The third ..	..	..	365d. 5h. 55m. 12s.[s] †

It is well known indeed that the solar and lunar time of the cycle of Meton, according to the principles and assumptions of its author, and its proper rule of administration, was liable to accumulate an excess of 24 hours in 76 years; to cut off which was the object of the Callippic correction: and that his solar standard must have involved an excess of $\frac{1}{76}$th part of 24 hours on the mean Julian standard of 365d. 6h. is a necessary inference from that liability. The fractional part of a 366th day and night, which entered into the annual solar standard of Meton, being thus made up of $\frac{1}{4}$th and $\frac{1}{76}$th

* Proclus Diadochus, after some observations on the Egyptian or equable year, adds in reference to this standard of Hipparchus and Ptolemy, Οἱ δὲ (Hipp. and Ptol.) *ταῖς προειρημέναις ἑπόμενοι τηρήσεσιν οὐ μόνον κατὰ δ′ ἔτη ποιοῦσι τὸν ἐνιαυτὸν ἓξ καὶ ξ′ καὶ ε′* (lege *τ′ καὶ ξ′ καὶ ϛ′*) *ἡμερῶν, ἀλλὰ καὶ παρὰ τὰ τ′ ἔτη τὴν μὲν* (*μίαν*) *ἡμέραν οὐ προστιθέασι, διὰ τὴν ἔλλειψιν τοῦ τριακοσιοστοῦ καθ᾽ ἕκαστον ἔτος γινομένην.* Ptol. Opp. iv. 88: Hypotyposes. Cf. Opp. vii. Isaacius Argyrus, Canones Paschales, vi. 113, 114: Uranologium, xvi. 381 A.

† Magna Compositio, iii. cap. ii. Opp. i. 165. ad principium, this is stated at 365 days, and 14′ 48″ of the sexagesimal notation. That is,

′	m.		m.	h.	m.	s.
14 ×	24 =		336 =	5	36	0
″	s.		s.			
48 ×	24 =		1152 =		19	12
365d. 14′ +	48″ =			365d. 5	55	12

[s] Cf. p. 165. also our Fasti Cath. i. 75.

part of a day and night, his standard is frequently represented at 365 days and nights, and $\frac{5}{19}$th of one more; because $\frac{1}{4}+\frac{1}{76}=\frac{95}{361}=\frac{5}{19}$: as for instance by Censorinus[t], 365 days, and dierum quinque undevigesimam partem. The authority of Meton seems to have given currency to this standard, in some quarters, long even after the error involved in it had been pointed out. Theodosius, author of the treatise Περὶ ἡμερῶν καὶ νυκτῶν, still extant[v], (whose age Delambre dates B. C. 50[x],) virtually recognises it[y]: *Πάλιν δὴ κατὰ Μέτωνα καὶ Εὐκτήμονα, ἐπειδὴ φαίνεται τὸν ἐνιαυτὸν αὐτοῖς εἶναι ἡμερῶν τξε΄, καὶ ἔτι πέντε ἐννέα καὶ δεκάτων περιφορᾶς· διὰ δέκα ἐννέα ἐτῶν ἔσται ἅπαντα κατὰ τὰ αὐτά.* And it is implicitly assumed even by Julius Africanus, a Christian chronologer, who flourished A. D. 236: *Τὸ μὲν ἔτος ἐπίπαν ἕκαστόν ἐστιν ἡμερῶν τξε΄, καὶ ἡμέρας καὶ νυκτὸς εἰς ἐννεακαιδέκατον διαιρεθείσης, μέρη τούτων τὰ ε΄.*[z].

SECTION VIII.—*On the quarters of the year, or divisions of the seasons, and the names of the months, in the Solar Calendar of Meton.*

Those who adopted Callippus' standard of the natural year, (altogether the same as the mean Julian,) as for example Geminus[a], divided the year accordingly. Geminus' division of it is as follows[b].

	d.	h.
i. From the first degree of Aries to the last of Gemini: Vernal quarter	94	12
ii. From the first degree of Cancer to the last of Virgo: Summer quarter	92	12
iii. From the first degree of Chelæ or Libra to the last of Sagittarius: Autumnal quarter	88	3*
iv. From the first degree of Capricorn to the last of Pisces: Winter quarter	90	3
Sum of the four quarters, or length of the natural solar year	365	6

* That is, $\frac{1}{8}$th of a day and night, πη΄ η^όν.

[t] De Die Natali, xix. cf. also Geminus, vi. Uranologium, 38 B-C.

[v] Sphæricæ Doctrinæ Propositiones, &c. Per M. Conradum Dasypodium in lucem editæ, Argentorati 1572.

[x] Ancienne Astronomie, i. xiii. 234–243: cf. Strabo. xii. 4. p. 55, But see Fabricius, Bibl. Græca, ii. lib. iii. 5. § 16. p. 91: Diogenes Laertius, ix. cap. xi. § viii. 70: Vitruvius, ix 6. 280.

[y] Προτ. ιη΄. p. 35, 36.

[z] Reliquiæ Sacræ, ii. Africani Chron. 4. pag. 189. 10: cf. Syncellus, 611. 20. 612. 5.

[a] Cap. i. Uranologium, 2. B. C. v. 22. C.

[b] Cap. i. Uran. 5. A. C.

In the length of the first two of these quarters, Hipparchus and Ptolemy agreed with Geminus[c]: in the last two they must have made some difference. Cleomedes, περὶ Μετεώρων, (a later writer than Geminus[d], though his age is not exactly known,) has these divisions also; the same in every respect, except in the autumnal and the winter quarter: but his text in these two instances is corrupt, and is to be corrected probably after Geminus*. In the sum total he agrees with Geminus; and it is manifest that the standard of the solar year, in both, as well as Callippus', was neither more nor less than that of the mean Julian year itself.

Now the solar standard of Meton differing so slightly (for any one year at least) from that of Callippus; it is probable that he divided the year, in the first instance, altogether in the same way as Callippus. For the same reason, the subdivisions of these quarters, the months of the celestial calendar, the ingresses of the sun into the different signs, and the time of the passage through each, it is to be presumed, must have been much the same in his Parapegma as in that of Callippus. Now a calendar, conformed to the scheme of Callippus, is still extant in the remains of Geminus; subjoined to the conclusion of his work[e], and entitled Χρόνοι τῶν ζωδίων,

* i. 6. p. 37. 9: *Οὐδὲ οἱ μεταξύ τε τῶν τροπικῶν τε καὶ ἰσημερινοῦ χρόνοι ἴσοι εἰσίν. ἀπὸ μὲν γὰρ ἐαρινῆς ἰσημερίας μέχρι θερινῶν τροπῶν ἡμέραι εἰσὶ ϟδ καὶ ἥμισυ* (94 d. 12 h.)· *ἀπὸ δὲ θερινῆς τροπῆς μέχρι φθινοπωρινῆς ἰσημερίας ἡμέραι ϟβ καὶ ἥμισυ* (92 d. 12 h.)· *ἀπὸ δὲ ταύτης τῆς ἰσημερίας ἄχρι χειμερινῆς τροπῆς ἡμέραι πη* (88)· *ἀπὸ δὲ χειμερινῆς τροπῆς ἐπὶ ἐαρινὴν ἰσημερίαν ϟδ* (94 d.). Here the reading varies. The true reading seems to have been ϟδ′ ($90\frac{1}{4}$). That is, according to Cleomedes,

	d.	h.
The length of the Spring quarter was	94	12
That of the Summer —	92	12
	187	0
The length of the Autumnal was	88	0
That of the Winter —	90	6
	365	6

[c] Cf. Opp. i. 184. 185. Magna Compos. iii. iv. A. D. 139–140. Ptolemy reckoned,

	d.	h.
From the A. E. to the Vernal	178	6
From the V. E. to the S. S.	94	12
From the S. S. to the A. E.	92	12
Total	365	6

Subject however to a diminution of $\frac{24}{300}$ h. or 4m. 48 sec. we must presume.

[d] Of the age of Geminus, see our F. Catholici, ii. 451.

[e] Cap. xvi. Uranolog. 64–70.

ἐν οἷς ἕκαστον αὐτῶν ὁ ἥλιος διαπορεύεται, καὶ αἱ καθ' ἕκαστον ζῴδιον γινόμεναι ἐπισημασίαι, αἱ ὑπογεγραμμέναι εἰσίν. And it begins at the summer solstice; Ἀρξώμεθα δὲ ἀπὸ θερινῆς τροπῆς. In all these respects it was probably a perfect facsimile of that of Callippus; and therefore, *mutatis mutandis*, of that of Meton.

Now, in Parapegmata of this description, it seems to have been the rule to give names to the months of the celestial or sidereal calendar, taken from those of the corresponding signs of the zodiac, slightly modified: Καρκινὼν for example to the first, formed from κάρκινος, Λεοντὼν to the second, formed from λέων, and so forth, all round the zodiac, beginning with Cancer. This nomenclature indeed does not appear in the Parapegma of Geminus; the months are therein called by the names of the signs unchanged, κάρκινος, λέων, and the rest. But it appears in an ancient calendar, (older considerably than this of Geminus,) some idea of which may be conceived from Ptolemy's references to it; who has several times quoted it, under the name of that of Dionysius [f]. From the analysis of its dates, adduced by him, we discover that it took its rise at the summer solstice B. C. 285; and consequently in the first year of the reign of Ptolemy Philadelphus [ff]; and certain of its months, with their limits, as laid down by the author, in terms of the Julian calendar, are recoverable also from the data supplied by Ptolemy *.

* For example (if the numbers of Ptolemy are not corrupt)—

Leonton	*July 27	Magn.	Compos.	ix. vii. 170.
Parthenon	Aug. 25	—	—	xi. iii. 263.
Scorpion	Oct. 24	—	—	ix. x. 187.
Ægon	Dec. 24	—	—	x. ix. 236.
Hydron	*Jan. 14 or 15	—	—	ix. vii. 168.
*Tauron (corr. Didymon)	May 22	—	—	ix. vii. 169.
Didymon	May 22	—	—	ix. vii. 169.

The æra, in every instance but that of Parthenon, August 25, bears date at the summer solstice, Nab. 463. B. C. 285. In that instance, the date in terms of the Æra, 45, is corrupt for 44 = Phil. 83. Nab. 507.

Of the author of this Calendar, Dionysius, see Scaliger, De Emendatione, iv. 268. With respect to the Calendar itself, we strongly suspect that it borrowed nothing from the Celestial Calendar but the names of its months, modified as we have explained; but that it was itself a Julian

f Cf. our Fasti Catholici, ii. 414, 415. iv. Planetary Observations.

ff Ibid. 429. 430.

Whether this Dionysius was the inventor of this peculiar nomenclature, is not known; yet we incline to the opinion that he was not; that he found it in use, and merely adopted it. We hope to see hereafter that the names of the signs of the zodiac, beginning with Capricorn, had been transferred to the months of the Macedonian calendar, probably as early as B. C. 307. It appears to us most probable, that these names, so borrowed from those of the signs, and so modified as we have described, were as old as the contrivance of the first Parapegma of antiquity, the first solar and sidereal calendar; whatsoever that was. We shall not hesitate therefore to apply them to the celestial calendar of Meton; and, if we may only assume that the still extant Parapegma of Geminus, *mutatis mutandis*, is a fair representation of that of Meton and Euctemon also, the names, and order, and lengths of its months, so distinguished, may be stated as follows.

Solar and Sidereal Calendar of Meton.

i quarter, or Summer quarter. 92 days.

Months.	Days.		Sun's place.
i. Καρκινών	31	June 27—July 27 inclusive	Cancer.
ii. Λεοντών	31	July 28—Aug. 27 —	Leo.
iii. Παρθενών	30	Aug. 28—Sept. 26 —	Virgo.

calendar, with xii months of 30 days each, and five days over at the end of all, in the common years, six in the leap-years; bearing date at the summer solstice, assumed to be June 26, B. C. 285. It is impossible to render the numbers in Ptolemy, given as above stated, consistent, without supposing more or less of corruption in them, as they stand in his text at present; and the fewest corrections of this kind will be necessary, if we suppose the calendar to have been arranged as follows:

Probable Scheme of the Calendar adapted to the Æra of Dionysius. June 26 B. C. 285.

Months.	Days.	Midn.	Months.	Days.	Midn.
i. Karkinon	30	June 26	vii. Ægon	30	Dec. 23
ii. Leonton	30	July 26	viii. Hydron	30	Jan. 22
iii. Parthenon	30	Aug. 25	ix. Ichthyon	30	Feb. 21
iv. Zygon	30	Sept. 24	x. Krion	30	March 23
v. Scorpion	30	Oct. 24	xi. Tauron	30	April 22
vi. Toxon	30	Nov. 23	xii. Didymon	30	May 22

Epagom. 5 June 21.

ii quarter, or Autumnal quarter. 89 days.

Months.	Days.		Sun's place.
iv. *Ζυγῶν*	30	Sept. 27—Oct. 26 inclusive	Libra.
v. *Σκορπιῶν*	30	Oct. 27—Nov. 25 —	Scorpio.
vi. *Τοξῶν*	29	Nov. 26—Dec. 24 —	Sagittarius.

iii quarter, or Winter quarter. 89 days.

vii. *Αἰγῶν*	29	Dec. 25—Jan. 22 inclusive	Capricorn.
viii. *Ὑδρῶν*	30	Jan. 23—Feb. 21 —	Aquarius.
ix. *Ἰχθυῶν*	30	Feb. 22—Mar. 23 —	Pisces.

iv quarter, or Spring quarter. 95 days.

x. *Κριῶν*	31	Mar. 24—April 23 inclusive	Aries.
xi. *Ταυρῶν*	32	April 24—May 25 —	Taurus.
xii. *Διδυμῶν*	32	May 26—June 26 —	Gemini.

It is manifest however that these must be received only as approximate statements of the lengths of these different passages. The actual ingresses of the sun would probably be laid down in terms of the hour, as well as of the day, in each instance: and if we may adopt the divisions of the quarters, given supra[g] from Geminus, and transfer them to the Parapegma of Meton, the actual entrances (in conformity to his principles) into each of the cardinal points, through each of the years of one cycle of four years respectively, beginning in the second year of the proper Julian cycle of leap-year, may be represented as follows.

Ingresses in the Calendar of Meton.

Second year of the Julian Cycle of Leap-year.

B.C. 432.			From Midnight.
i. Summer quarter	Karkinon 1	June 27.	4 h.
ii. Autumnal —	Zygon 1	Sept. 27.	16
iii. Winter —	Ægon 1	Dec. 24.	19
iv. Spring —	Krion 1	Mar. 24.	22

Third year of the Julian Cycle of Leap-year.

B.C. 431.			From Midnight.
i. Summer quarter	Karkinon 1	June 27.	10 h.
ii. Autumnal —	Zygon 1	Sept. 27.	22
iii. Winter —	Ægon 1	Dec. 25.	1
iv. Spring —	Krion 1	Mar. 25.	4

g Page 457.

Fourth year of the Julian Cycle of Leap-year.

B.C. 430.			From Midnight.
i. Summer quarter	Karkinon 1	June 27.	16 h.
ii. Autumnal —	Zygon 1	Sept. 28.	4
iii. Winter —	Ægon 1	Dec. 25.	7
iv. Spring —	Krion 1	Mar. 24.	10

First year of the Julian Cycle of Leap-year.

B.C. 429.			From Midnight.
i. Summer quarter	Karkinon 1	June 26.	22 h.
ii. Autumnal —	Zygon 1	Sept. 27.	10
iii. Winter —	Ægon 1	Dec. 24.	13
iv. Spring —	Krion 1	Mar. 24.	16

Second year of the Julian Cycle of Leap-year.

B.C. 428.			From Midnight.
i. Summer quarter	Karkinon 1	June 27.	4 h.

&c. as before.

In explanation of this scheme, we may observe, that as the cycle of Meton bore date B. C. 432, in the second year of the Julian cycle of leap-year, dated from March 1, B. C. 433; his date of the summer quarter, in the first year, June 27. at 4 hours from midnight, at the beginning of the second year, B. C. 431, would be June 27, at 10 hours from midnight; at the beginning of the third, B. C. 430, June 27, 16 hours from midnight; at the beginning of the fourth, B. C. 429, (leap-year in the Julian cycle, dated from March 1,) would be June 26, at 22 hours from midnight; and at the beginning of the fifth year, B. C. 428, (its second cycle of four years,) would be found to be June 27, at 4 hours from midnight, as it had been at first.

This scheme of things, in the calendar of Geminus, and in that of Callippus, it is manifest would be perpetual; their standard of the solar or sidereal year and the mean Julian being absolutely one and the same. But, according to the assumptions of Meton, whose annual standard included a fraction of mean solar time of 18 min. 57 sec. above the mean Julian one, the epoch of the fifth year in his calendar would necessarily be found, 18 min. 57 sec. × 4 in advance of that of the first before it. For instance, if B. C. 432, it was June 27, at 4 hours from midnight, B. C. 428, it would be June 27, at 5 h. 15 m. 48 sec. from midnight: and so on in proportion, for every successive cycle of four years, at the rate of 1 h. 15 m. 47·4 sec. in every cycle: until, at the end of 19 cycles, or 76 mean Julian years, its primary ingress, or the first year of the 20th cycle, the 77th year of the general decursus, would be found to be falling June 28, at 4 hours from midnight: one day and night exactly in advance of what it had been at first, June 27, at 4 hours from midnight. And in like manner, the epoch of the first new moon of the 77th year would be found one whole day in advance of what it had been at first; and consequently of the truth: the solar and the lunar epochs in this, as in every other lunæsolar cycle, necessarily keeping pace with each other.

This was a defect, inherent in the lunar and solar cycle of Meton, which must render it eventually almost as inaccurate a measure of true lunar and solar time, as the octaëteris itself; only in a much longer period. It was a defect too, the correction of which, as soon as discovered, would be obvious and almost spontaneous, by the simple contrivance which Callippus applied to it; viz. abstracting one day at the end of every 76 years from the number contained in four Metonic cycles. We shall see reason however to conclude that, among the Athenians at least, the Metonic calendar, once brought into use in the time of its own author, never was corrected: but went on subject to the same rule of administration from the time of its publication to the time of its transition into the Julian calendar.

SECTION IX.—*On the details of the Solar and Sidereal Calendar of Meton.*

With regard to the details of the Parapegma of Meton; his calendar itself not having been transmitted to posterity, we can form only a conjectural opinion about them. It is to be presumed, his solar or sidereal calendar was that of Euctemon also; whom Hipparchus, and Ptolemy, and Theodosius associate with him in the work of its construction, and to whom Geminus seems to have attributed it almost exclusively: mentioning Euctemon * repeatedly, as if its

* Of this Euctemon also little is known, except that he was an

author, and once only alluding to Meton, Karkinon 25, the date of the heliacal rising of Sirius, according to him. We may presume too that it differed only slightly from that of Callippus; the cardinal dates of which appear to have been the same with those of Euctemon, and the other dates are commonly only one day in advance of his; not more than would be the consequence of the interval of time between them[h].

Now both this calendar of Euctemon and that of Callippus are incorporated, more or less, in the compilation of Geminus alluded to supra; and also in the Apparentiæ of Ptolemy[i]. It may be collected too from Columella[k], that his own calendar (which is entire from January to December in the Roman year[l]) was compiled chiefly from this of Meton and Euctemon. There is likewise an abstract of this calendar in Pliny[m]; and Joannes, surnamed Lydus, made a similar collection, from January to December, which he professed to have drawn up from this of Euctemon among others; and much of that too has come down along with others of his works[n]. Another and more perfect calendar of the same kind has come down under his name also[o], though its author was a different person, Claudius, surnamed Thuscus; and this too probably incorporated some things which originally made part of Meton's and Euctemon's. There is much likewise in the Scriptores Geoponici, bearing on the same subjects, and qualified to illustrate them.

Athenian, and a contemporary of Meton's. Festus Avienus, Ora Maritima, 47:

Euctemon quoque
Popularis urbis Atticæ:

And 450:

Atheniensis dicit Euctemon—

Though (336) he would imply that he was connected also with Amphipolis:

Amphipolis urbis incola Euctemon ait.

He might have settled at Amphipolis, while it was still subject to Athens.

[h] Cf. our Origines Kalendariæ Italicæ, iv. 155 sqq.

[i] Uranologium, 71–94.

[k] Supra, page 450.

[l] See our Origines Kalendariæ Italicæ, iv. 150 sqq.

[m] H. N. xviii. 57–74.

[n] Lydus, De Mensibus, iv. 50–112: v. 113–118.

[o] De Ostentis, 357–381. Vide our Origines Kalendariæ Italicæ, ii. 460. Diss. xi. chap. v.

From all these sources of information, a good idea might be formed of the original Parapegma of Meton; and were it *operæ pretium* at present to attempt to reconstruct it, much of the matter which once entered into it might be restored: not only the ingresses of its different quarters, and the limits of its celestial months, but its particular sidereal and meteorological phenomena, the risings and settings of the principal stars for the climate of Attica, according to those distinctions of acronychal, cosmical, and heliacal, which the ancient astronomers made therein*, and the ἐπισημασίαι, or affections of the air and weather, supposed to be connected with them. It is not our intention however to enter on this restoration. We have said enough to satisfy the demands of this part of our subject; a general illustration of the nature and constitution of the solar calendar of Meton, in contradistinction to his lunar one. Yet before we conclude, it may not be amiss to notice what appears to have made up the principal part of its details, and of those of every similar one, either older or younger than his: the sidereal and meteorological phenomena, with their characteristic ἐπισημασίαι, to which we have briefly adverted.

Section X.—*On the doctrine of the ἐπισημασίαι of the Parapegmata of antiquity.*

The notion of planetary and sidereal momenta, capable of determining even the fortunes of men, appears to have been so old and so general in all parts of the world, that it is no wonder, while such a power was attributed to them over moral and rational agents, that they should have been regarded as omnipotent over inanimate and material natures;

* To enumerate and explain these distinctions would be almost an endless task. The reader who is curious to see them may refer to Ptolemy, Magna Compositio, viii. iv. 100–104. Opp. vi. Πρόχειροι Κανόνες of Theon, page 61: iii. De Apparentiis, 14–18: Geminus, xi: Uranolog. 45 B—49 D: Theophrastus, vi. 782. De Signis Pluviarum, ad princip.: Achilles Tatius, ad Arati Phænomena, § 39. 163 C–E: Scholia ad Apollon. Rhod. iii. 225–227: Joannes Diaconus, εἰς Θεογονίαν Ἡσιόδου ἀλληγορίαι. v. 381. page 471, 472: Autolycus, περὶ ἐπιτολῶν καὶ δύσεων, (Sphæricæ Doctrinæ SS. ut supra,) especially lib. i. p. 40, 41: Stobæus, Eclogæ Physicæ, i. 520. xxv.: Servius ad Georg. i. 219: iv. 231–235, &c.

or that the air and weather should have been considered subject to a jurisdiction, from which even men themselves were not exempt. Certain at least it is, that nothing was more implicitly believed in, even by the wisest of the ancients, than these planetary or sidereal influences over the weather. Sed et ceteræ quoque stellæ, observes Seneca[p], non minus terrena quam incumbentem spiritum terris afficiunt, et ortu suo occasuve contrario modo frigora modo imbres aliasque terrarum injurias turbidæ movent—Τὰς δὲ *ἐπισημασίας, τάς τε χειμερινὰς καὶ τὰς θερινὰς, κατὰ τὰς τῶν ἄστρων ἐπιτολάς τε καὶ δυσμὰς γίγνεσθαι*[q]—*Εὔδοξος καὶ Ἄρατος τὰς ἐπισημασίας κατὰ τὰς τῶν ἄστρων ἐπιτολὰς γίγνεσθαί* (*φασι*)[r] —*Ἢ ὅτι ἐπὶ πᾶσι μὲν σημαίνει τοῖς ἄστροις δυομένοις ἢ ἐπιτέλλουσιν, οὐχ ἥκιστα δὲ ἐπὶ τούτῳ*[s] (scil. τῷ Κυνί)—*Διὸ καὶ ταῦτα ἐπιτείνει καὶ παύει καὶ κρίνει καὶ ποιεῖ ὥσπερ αἱ ὧραι, καὶ ἐπιτολαὶ τῶν ἄστρων, ὥσπερ Ὠρίων καὶ Ἀρκτοῦρος καὶ Πλειὰς καὶ Κύων*[t]—*Ἐπεὶ καὶ ἐν τοῖς μὴ τοιούτοις* (warm climates) *αἱ διαδόσεις* (transmission of influences) *ταχεῖαι πάντων ἀπὸ τοῦ ἡλίου καὶ τῶν ἄστρων. φαίνεται γοῦν συμπάσχειν οὐ μόνον τὰ ἐπὶ γῆς ἀλλὰ καὶ τὰ ὑπὸ γῆς ὕδατα τροπαῖς τε καὶ ἐπιτολαῖς. ἐπ' ἐνίων δὲ ἄστρων καὶ αὐτὴ ἡ γῆ καὶ ἡ θάλαττα μεταβάλλει*[v].

The authors of the Parapegmata of antiquity at least must have laboured above all others under this persuasion; as their extant remains abundantly prove. And among these we can enumerate the Egyptians, the Chaldæans, the Etrurians, Democritus, Meton, Euctemon, Eudoxus, Callippus, Philippus, Aratus, Conon, Dositheus, Hipparchus, Metrodorus, Varro, Cæsar[x]; besides others, who are known to have been the authors of similar productions, of which nothing has come down to posterity. Vitruvius, after mentioning Thales, Anaxagoras, Pythagoras, Xenophanes, Democritus, as writers de rebus naturalibus, continues[y]: Quorum inventa secuti siderum ortus et occasus tempestatumque significatus Eu-

p Opp. v. 89. Natur. Quæst. ii. xi. 2.

q Stobæus, Eclogæ Phys. i. 512. xxv. 1. Platonis.

r Ibid. 518.

s Aristoteles, Opp. ii. 941. 1 b. Problema xxvi. 12.

t Ibid. Opp. ii. 859. 21 a. Ἰατρικὰ προβλήματα Α. 3.

v Theophrastus, De Causis, ii. 19. 437. 4.

x Cf. Ptolemy, De Apparentiis, Uranolog. 93. 94: Pliny, H. N. xviii. 57–74: Lydus, De Mensibus, iv. 1. 98: Vegetius, v. 11: Plutarch, Lucullus, xxii: Servius ad Georg. i. 230: Epistolæ Diversorum ad Ausonium, Symmachi, iv.

y Lib. ix. 4. p. 276.

doxus, Eudæmon (corr. Euctæmon), Callippus, Melo (corr. Meto), Philippus, Hipparchus, Aratus, ceterique ex astrologia parapegmatorum disciplinas invenerunt, et eas posteris explicatas reliquerunt. quorum scientiæ sunt hominibus suspiciendæ, quod tanta cura fuerunt, ut etiam videantur divina mente tempestatum significatus post futuros ante pronuntiare: quas ob res hæc eorum curis studiisque sunt concedenda.

The word ἐπισημασία, so frequent of occurrence in connection with these subjects, properly denotes *a signification, an intimation, an announcement, a prognostic* or *symptom* of something: yet, as technically used by the authors of these parapegmata, it stands not so much for the antecedents or causes of such things as for the consequents or effects themselves. These ἐπισημασίαι were not the causes which produced such affections of the weather, but the affections themselves so produced, and the intimations or proofs of such agencies. The same distinction is applicable to the verb ἐπισημαίνειν, commonly predicated of them: Τὸ δὲ ἐπισημαίνειν ἐστὶ μεταβολὴν τοῦ ἀέρος ποιεῖν [z]: which illustrates the distinction in question. Aratus calls these ἐπισημασίαι σήματα;

> Αἰεὶ δ' ἂν περιόντος ἀριθμοίης ἐνιαυτοῦ
> σήματα συμβάλλων, εἴ που καὶ ἐπ' ἀστέρι τοίη
> ἠὼς ἀντέλλοντι κατέρχεται ἢ κατιόντι
> ὁπποῖον καὶ σῆμα λέγοι [a]—

and here too σῆμα is used of the thing notified, rather than of the thing which notified it.

There were however some of the ancients, especially the later writers (like Geminus and Ptolemy), who appear to have been sceptical of the truth of the popular belief on this subject; and in particular Geminus, of whose opinion we shall speak by and by. With regard to Ptolemy, it appears from the Magna Compositio [b], that he once thought of inserting a Parapegma or calendar, such as we have been describing, with the risings and settings of the fixed stars, *pro climatis*, and the ἐπισημασίαι, attendant upon them; the proper place of which, if it was to be attempted, would have

[z] Aristoteles, Opp. ii. 941. 9. Problema xxvi. 12.
[a] Diosemeia, 413.
[b] viii. vi. Opp. ii. 112, 113.

been that part of the work. He excuses himself however from doing it there*, for various reasons, applicable to each of the parts of which it must have consisted: i. To the risings and settings of the stars—partly from the complexity of the subject, including so many distinctions of climates and parallels, partly from the nicety and difficulty of the necessary observations, partly because of the precession, or, as he describes it, the motion of the sphere of the fixed stars *in consequentia*, or backwards, by virtue of which such observations, however correctly made and laid down at first, must necessarily become inaccurate, in the course of time, even for one and the same parallel. ii. To the ἐπισημασίαι, or presignified effects—partly because he himself was not satisfied whether the effect in such cases was due to the appearing or the disappearing of the stars at such times, or to the place of the sun in its annual revolution, partly because these appearances and disappearances themselves, as experience proved, could not be depended on as certain prognostics, but at the utmost only as general indications, and as an approximation to certainty.

With regard to Geminus, he has devoted an entire chapter to this question[c]; the whole of which is well worth the reader's perusal, though it is too long to be here produced. It treats at large Περὶ ἐπισημασιῶν τῶν ἄστρων; its object being to correct the popular notion that the risings or settings of the stars were any thing but the accidental causes, though they might be stated and regular antecedents, of the changes of the air and weather, commonly believed to follow upon them.

It begins: Ὁ περὶ ἐπισημασιῶν λόγος παρὰ μὲν τοῖς ἰδιώταις ἀλλοίαν ἔχει διάληψιν, ὡς ἐπὶ τῶν ἄστρων ἐπιτολαῖς καὶ δύσεσι τῶν περὶ τὸν ἀέρα μεταβολῶν γινομένων. The mode in which the parapegmata, defining these things, were formed, and the general principles on which the assumption of such ἐπι-

* What however he thus declined doing in the Magna Compositio, he probably did afterwards in the compilation of his Apparentiæ—to which we have so often had occasion to refer. For some further account of it, see our Origines Kalendariæ Italicæ, iv. 152 sqq.

[c] Cap. xiv. Uranolog. 55 C-61 D.

σημασίαι was founded, are noticed as follows[d]: *Αἱ δὲ γινόμεναι προρρήσεις τῶν ἐπισημασιῶν ἐν τοῖς παραπήγμασιν οὐκ ἀπὸ τινῶν παραγγελμάτων ὡρισμένων γίνονται, οὐδὲ τέχνῃ τινὶ μεθοδεύονται, κατηναγκασμένον ἔχουσαι τὸ ἀποτέλεσμα· ἀλλ' οἱ ἐκ τοῦ ὡς ἐπίπαν γινομένου διὰ τῆς καθ' ἡμέραν παρατηρήσεως τὸ σύμφωνον λαμβάνοντες εἰς τὰ παραπήγματα κατεχώρισαν.*

Ἐγένετο δὲ ἡ σύστασις καὶ ἡ παρατήρησις τὸν τρόπον τοῦτον. λαμβάνοντες γὰρ ἀρχὴν ἐνιαυτοῦ, καὶ παρατηρήσαντες ἐν τίνι ζωδίῳ ὁ ἥλιος ὑπῆρχε κατὰ τὴν ἀρχὴν ἐνιαυτοῦ, καὶ πρὸς τὴν μοῖραν ἀναγράφοντες καθ' ἑκάστην ἡμέραν καὶ μῆνα τὰς γενομένας ὁλοσχερεῖς μεταβολὰς τοῦ ἀέρος, πνευμάτων, ὄμβρων, χαλάζης, παρετίθεσαν ταῖς τοῦ ἡλίου ἐποχαῖς κατὰ ζωδίον καὶ κατὰ μοῖραν. τοῦτο ἐπὶ πλείονα ἔτη παρατηρήσαντες, τὰς μάλιστα περὶ τοὺς αὐτοὺς τόπους τοῦ ζωδιακοῦ γινομένας μεταβολὰς ἐν τοῖς παραπήγμασιν ἀνεγράψαντο, οὐκ ἀπό τινος τέχνης οὐδὲ μεθόδου ὡρισμένης λαβόντες τὴν ἀναγραφὴν, ἀλλ' ἐκ τῆς πείρας τὸ σύμφωνον ὡς ἔγγιστα λαβόντες.

Why they were obliged to take their data for these aerial phenomena from the sidereal or celestial calendar, he attributes to the existing distinctions of the civil calendar, and the civil reckoning of the years and months; which rendered any uniform notation of such things in terms of the civil calendar impossible[e]: *Ἐπεὶ δὲ οὐκ ἐδύναντο οὐθ' ἡμέραν οὔτε μῆνα οὔτε ἐνιαυτὸν ὡρισμένον ἀναγράψαι, ἐν ᾧ τι τούτων ἐπιτελεῖται (διὰ τὸ τὰς ἀρχὰς τῶν ἐνιαυτῶν μὴ παρὰ πᾶσιν εἶναι τὰς αὐτὰς, μηδὲ τοὺς μῆνας τοὺς αὐτοὺς εἶναι παρὰ πᾶσι ταῖς ὀνομασίαις, μηδὲ τὰς ἡμέρας ὁμοίως ἄγεσθαι *), ἱσταμένοις τισὶ σημείοις ἠθέλησαν ἀφορίσαι τὰς μεταβολὰς τοῦ ἀέρος. ὅθεν (ἅμα) ταῖς τῶν ἄστρων ἐπιτολαῖς κατὰ τοὺς καιροὺς ἀφωρισμέναι* (ita leg.) *αἱ μεταβολαὶ τοῦ ἀέρος γίνονται, οὐχ ὡς τῶν ἄστρων δύναμιν ἐχόντων πρὸς τὴν μεταβολὴν τῶν πνευμάτων καὶ τῶν ὄμβρων, ἀλλ' ὡς σημείου χάριν παρειλημμένων, πρὸς τὸ προγινώσκειν ἡμᾶς τὰς περὶ τὸν ἀέρα περιστά-*

* This is a very just description of the state of things which began to prevail among the Greeks, as soon as one Type of the same lunar calendar in general began to be adopted, after another. See our own observations on this point supra page 84. We may infer from it that none of their sidereal Parapegmata was older than the first lunar correction among them, B. C. 592.

[d] Pag. 56 A–B. [e] Pag. 56 C.

σεις. καὶ ὥσπερ ὁ πυρσὸς οὐκ αὐτός ἐστι παραίτιος τῆς πολεμικῆς περιστάσεως, ἀλλὰ σημεῖόν ἐστι πολεμικοῦ καιροῦ, τὸν αὐτὸν τρόπον καὶ αἱ τῶν ἄστρων ἐπιτολαὶ οὐκ αὐταὶ παραίτιοί εἰσι τῶν περὶ τὸν ἀέρα μεταβολῶν, ἀλλὰ σημεῖα ἔκκεινται τῶν τοιούτων περιστάσεων κ᾿, τ. λ.

He proceeds to comment next on the differences necessarily introduced into such observations, and into the certainty of the prognostications founded upon them, by the diversity of climates or latitudes[f]: Τὸ *γὰρ αὐτὸ παράπηγμα οὐ δύναται συμφωνεῖν ἐν τῇ Ῥώμῃ καὶ ἐν τῷ Πόντῳ καὶ ἐν Ῥόδῳ καὶ ἐν Ἀλεξανδρείᾳ· ἀλλὰ ἀνάγκη διαφόρους τὰς παρατηρήσεις εἶναι ἐν διαφόροις ὁρίζουσι, καὶ καθ᾿ ἑκάστην πόλιν ἕτερα λαμβάνεσθαι ἄστρα ἐπισημασίας ἐπιτελοῦντα. ἐξ οὗ φανερὸν ὅτι οὐ φυσικῶς αἱ τῶν ἄστρων ἐπιτολαὶ καὶ δύσεις τὰ περὶ τὸν ἀέρα πάθη ἀπογεννῶσιν, ἀλλὰ καθ᾿ ἕκαστον ὁρίζοντα διάφοροι παρατηρήσεις γεγόνασι, καὶ τῶν ἄστρων μεταβολαί. διόπερ οὐδὲ πᾶσαι (αἱ) ἐπισημασίαι ἐν τοῖς παραπήγμασιν ἀγομέναι ἀεὶ συμφωνοῦσιν, ἀλλ᾿ ἐστὶ μὲν ὅτε καθόλου οὐ γίνονται, ἀλλὰ τοὺς μεγίστους περιέχουσαι χειμῶνας ἐπιτολαὶ καὶ δύσεις εὐδίας ἀποτελοῦσιν· ἐστὶ δὲ ὅτε κατὰ μὲν τὴν πόλιν εὐδία ἐγένετο, ἐπὶ χώρας δὲ ὄμβρος· πολλάκις δέ τις μεθ᾿ ἡμέρας τρεῖς ἢ τέσσαρας ἐπεσήμηνε τῇ ἐπιτολῇ ἢ τῇ δύσει τοῦ ἄστρου· ἔστι δὲ ὅτε προέλαβε τὴν ἐπισημασίαν πρὸ ἡμερῶν τεσσάρων. ὅθεν καὶ οἱ ἀποτυγχάνοντες ἐν ταῖς προρρήσεσι τῶν ἐπισημασιῶν ἔχουσιν ἀπολογίαν, ὅτε προέλαβον τὴν ἐπισημασίαν, ὅτι ὑστέρα ἐγένετο κ᾿, τ. λ.* *

Geminus instances in the case of the Dog-star[g]: Πάντες *γὰρ,* says he, *ὑπολαμβάνουσιν ἰδίαν δύναμιν ἔχειν τὸν ἀστέρα, καὶ παραίτιον γίνεσθαι τῆς τῶν καυμάτων ἐπιτάσεως ἅμα συνεπιτέλλοντα τῷ ἡλίῳ*—an idea which he proceeds to combat by a

* This Anticipation of the expected effect, or on the contrary Procrastination, was no doubt found by experience a very common thing. Theophrastus, vi. 4. ad fin. De Signis Aquarum: *Τοῖς δ᾿ ἄστροις εἴωθεν ὡς ἐπιτοπολὺ σημαίνειν, καὶ ταῖς ἰσημερίαις καὶ τροπαῖς, οὐκ ἐπ᾿ αὐταῖς ἀλλ᾿ ἢ πρὸ αὐτῶν ἢ ὕστερον μικρῷ.* Hence too, Servius, ad Georg. i. 205: Bene autem ait *dies* (de Auriga) quia et magnitudine sui multis diebus oritur, et tempestas aut præcedit signum, aut sequitur, aut cum eo est. The effect in the first of these cases was called *προχείμασις,* in the second, *ἐπιχείμασις* or *μεταχείμασις.* For what we had occasion to say on this subject, on a remarkable case in point, B. C. 47, at Ruspina in Africa, see our Origines Kal. Italicæ, iii. 511. ii.

f Pag. 57 D.

g Pag. 58 D.

variety of arguments; concluding his reasoning as follows[h]: Ἐπίτασιν δὲ ἐποίει ἂν, εἴ τινα δύναμιν εἶχεν ὁ ἀστὴρ, ἅμα γινόμενος τῷ ἡλίῳ κατὰ χειμερινὰς τροπὰς, ὅταν ἐπὶ τῷ αὐτῷ κύκλῳ φέρηται ὁ ἀστὴρ τῷ ἡλίῳ. τότε γὰρ ἔδει γενέσθαι τινὰ πρὸς τὸ φαινόμενον αἰσθητὴν περὶ τὸν ἀέρα παραλλαγήν. οὐ γίνεται δὲ τοῦτο, ἀλλ᾽ ἐκ τοῦ ἐναντίου χειμών. ὅθεν τοῖς παραπήγμασι παράκειται σημεῖον κ̀, τ. λ. That is, the note of χειμὼν or χειμάζει was attached to the winter solstice, not that of πνίγη or heats; and such was actually the case with the first of Ægon, Dec. 25, the winter solstice in the calendar of Euctemon and Callippus, and with the fourth, Dec. 28, that of the calendar of Eudoxus.

The above observations however indicate clearly enough both the nature and the object of these Parapegmata; viz. that they were the almanacks of antiquity, and undertook to tell people what changes of the weather they were to expect every day, or almost every day, throughout the year.

> Hinc tempestates dubio prædiscere cœlo
> Possumus, hinc messisque diem tempusque serendi,
> Et quando infidum remis impellere marmor
> Conveniat—quando armatas deducere classes,
> Aut tempestivam silvis evertere pinum.
> Nec frustra signorum obitus speculamur et ortus,
> Temporibusque parem diversis quatuor annum[i].

> Hoc ex fonte velut deduxit tempora lunæ
> Navita, quo longum facili rate curreret æquor,
> Et quo ruris amans telluri farra parenti
> Crederet: ingenti petat hæc indagine semper
> Seu qui vela salo seu qui dat semina terræ.
> Nec mora discendi: brevis hic labor et breve tempus
> Poscitur; innumeros habet autem industria fructus.
> Utilitas te certa manet prænoscere motus
> Si libet aërios, et tempestatibus ipsis
> Edere principium[k].

And notwithstanding the scepticism of Ptolemy or Geminus, about the feasibility of such undertakings, or the degree of reliance which was to be placed upon their results, if Diodorus is to be believed[l], the attempt of Meton in particular had been as successful as any; and his Parapegma had not only stood the test of time all along, but still continued

[h] 60 E.
[i] Georgica, i. 252.
[k] Festus, Aratea Prognostica, 52.
[l] Supra, page 449.

to be consulted, and to give satisfaction, when Diodorus himself was writing [m]. We have produced *one* testimony to this effect, from Columella [n]; and we may conclude with one more from him likewise [o]: Accedit huc quod ille, quem nos perfectum esse volumus agricolam, si quidem artis consummatæ non sit, nec in universa rerum natura sagacitatem Democriti vel Pythagoræ fuerit consecutus, et in motibus astrorum ventorumque Metonis providentiam vel Eudoxi: where, we see, he again classes together Meton and Eudoxus, as *facile principes* of the authors of Parapegmata in general.

It is matter of regret then that we possess neither of these entire; nor any other of equal antiquity; (as that of Democritus or that of Callippus.) If such calendars had come down exactly as they proceeded from the hands of their authors, the science of Meteorology, even at the present day, might have been much benefitted by them; founded as they all were on long and close observation of meteorological phenomena in general: while with respect to a variety of allusions which occur in the classical writers, even when treating of different subjects, the fragments which remain of them are still extremely serviceable in throwing light upon them. We will conclude with one or two examples of this kind.

i. The *ἀνατολὴ*, *ἐπιτολὴ* or *δύσις* of Orion—and the *ἐπισημασία* ordinarily assigned thereto. The wreck of the Roman fleet, in the tenth year of the first Punic war, Marco Æmilio, Servio Fulvio Coss. B. C. 255, was attributed by Polybius [p] to the circumstance of its being at sea between the rising of Orion and that of the Dog-star: *Ἅμα δὲ καὶ τὴν μὲν οὐδέπω καταλήγειν ἐπισημασίαν τὴν δ᾿ ἐπιφέρεσθαι· μεταξὺ γὰρ ἐποιοῦντο τὸν πλοῦν τῆς Ὠρίωνος καὶ Κυνὸς ἐπιτολῆς*: implying that this was a time notorious for bad weather. *Διὰ τί ἐπὶ Ὠρίωνι*, says Aristotle [q], *γίνονται αἰόλοι μάλιστα αἱ ἡμέραι, καὶ ἀκαιρίαι τῶν πνευμάτων; . . . ὁ δ᾿ Ὠρίων ἀνατέλλει μὲν ἐν ἀρχῇ ὀπώρας δύνει δὲ χειμῶνος . . . καὶ χαλεπὸς δὴ λέγεται καὶ δύνων καὶ ἀνατέλλων . . . διὰ τὴν ἀοριστίαν τῆς ὥρας—Ἄκριτος δὲ καὶ χαλεπὸς ὁ Ὠρίων εἶναι δοκεῖ καὶ δύνων καὶ ἐπιτέλλων, διὰ τὸ ἐν μεταβολῇ ὥρας συμβαίνειν τὴν δύσιν καὶ τὴν ἀνατολὴν, θέρους ἢ χειμῶνος· καὶ*

[m] See his age, in our Fasti Catholici, iv. 214.

[n] Supra, page 450.

[o] De Re Rustica, i. Præfatio, § 32.

[p] Lib. i. 36, § 10: 37. § 4.

[q] Opp. ii. 941. 24 b. προβλήματα, xxvi. 13.

διὰ τὸ μέγεθος τοῦ ἄστρου ἡμερῶν γίνεταί τι πλῆθος[r]—Theophrastus: *Αἱ δ' ἐπ' Ὠρίωνος ἀνατολῇ καὶ δύσει τῶν πνευμάτων ἀκρισίαι συμβαίνουσιν ὅτι ἐν μεταβολαῖς ἀεὶ πάντα μάλιστα πέφυκεν ἀοριστεῖν. ὁ δ' Ὠρίων ἀνατέλλει μὲν ἐν ἀρχῇ ὀπώρας, δύνει δὲ ἐν ἀρχῇ χειμῶνος· ὥστε διὰ τὸ μήπω καθεστᾶναι (μηδὲ) μίαν ὥραν, τῆς μὲν γιγνομένης τῆς δὲ παυομένης, ἀνάγκη καὶ τὰ πνεύματα ἀκατάστατα καὶ ἄκριτα εἶναι, διὰ τὸ ἐπαμφοτερίζειν τὰ ἐξ ἑκατέρας. καὶ χαλεπὸς δὲ λέγεται καὶ δύνων καὶ ἀνατέλλων εἶναι διὰ τὴν ἀοριστίαν τῆς ὥρας*[s]—Hence Virgil:

> Cum subito adsurgens fluctu nimbosus Orion
> In vada cæca tulit[t]—

on which Servius: Sane ipse Orion magnitudine sua multis oritur diebus, et ideo ejus etiam apud peritos incerta est tempestas . . . bene autem *nimbosus*, quia et ortu suo et occasu tempestates commovet—

> Dum pelago desævit hyems et aquosus Orion[v].

Id est, dum occidit Orion, quoniam et oriens et occidens tempestates commovet. He observes[x] from Sallust, of Orion—Qui oritur juxta solis æstivi pulsum. In the calendar of Euctemon, it began to rise June 18, and ceased to rise July 9 *.

ii. Theophrastus[y]: *Ἐπ' ἀμφοῖν δὲ τοῦτο συμβαίνει, καὶ ἐν τῇ τοῦ Κυνὸς ἐπιτολῇ καὶ μετ' Ἀρκτοῦρον. ὑπὸ γὰρ αὐτὸ τὸ ἄστρον, καίπερ ὄντος ἐμπύρου τοῦ ἀέρος, ὅμως καὶ νότια πνεῖ καὶ νέφη συνίσταται—Τοῦτο δ' εἶναι (τὸ) σπέρμα...ὃ καὶ ὅταν νότος λαμπρὸς πνεύσῃ μετὰ κύνα, διαρρίπτεσθαι*[z]. Callippus, July 26, has Canis oriens fit conspicuus, et Auster spirat. So also Euctemon, in Ptolemy, the same day.

* Aristotle, Meteorologica, ii. 5. p. 52, 14. speaks of a *νηνεμία*, of stated occurrence, *περὶ Ὠρίωνος ἀνατολὴν . . . καὶ μέχρι τῶν ἐτησίων καὶ προδρόμων*. So also, Galen, after him, Opp. xvi. 399. 11. In Hippocr. *περὶ χυμῶν*, iii. 13. To render this consistent with the other *ἐπισημασία* attributed to it, it must be understood of the early part of the whole period taken up by the rising.

[r] Meteorologica, ii. 5. pag. 52. 21.
[s] De Ventis, v. 779. 55. Cf. Pliny, H. N. xviii. 59. p. 196.
[t] Æneid, i. 535.
[v] iv. 52. cf. vii. 719: and Statius, Silvæ, I. i. 44. Apollonius Rhod. i. 1201–1203. Anthologia, i. 178. Leonidæ Tarentini xc: ii. 250. Marci Argentorati xxxiii. 1–4.
[x] Ad Æn. v. 626.
[y] De Causis Plant. I. 13. § 5. 360, 9.
[z] Hist. Plant. vi. cap. 3, 4. De Silphio.

iii. With regard to Arcturus, the ἐπισημασία usually attributed to that star is rain: Ἅμα δὲ ἐν τῇ τοῦ ἄστρου μεταβολῇ (Arcturi nempe loco Caniculæ) ὑγρότης ἐν τῷ ἀέρι γίνεται [a]—Ἐὰν δὲ μὴ ἐπὶ Κυνὶ ὕσῃ ἢ ἐπὶ Ἀρκτούρῳ, ὡς ἐπὶ τὸ πολὺ πρὸς ἰσημερίαν ὕδωρ ἢ ἄνεμος [aa]. Winds and rain were the concomitants of Arcturus [b]: and the calendars shew storms, and winds, and rain, both Sept. 6 and 16, the two dates of its rising, respectively—Propterea quia post idus Septembris oritur Arcturus, vehementissimum sidus [c]—Icarius autem Arcturus nominatus est; cujus stella cum exoritur continuas tempestates facit [d]. Pliny attributes to this star the specific effect of hail [e]: Arcturi vero sidus non ferme sine procellosa grandine emergit. So likewise Lydus [f]: Ὥσπερ ἡ μὲν ἐπιτολὴ τῶν ὑάδων ὄμβρον πόλυν, ἡ δὲ τῶν ἐρίφων καὶ Ἀρκτούρου χαλαζώδη τοῦτον ἀποτελεῖ. Virgil observes [g],

> At si non fuerit tellus fecunda sub ipsum
> Arcturum tenui sat erit suspendere sulco—

On which Servius: Id est autumnali tempore, quo Arcturus oritur . . . . hoc autem est tum cum jam pluere compertum. Arcturus enim pluviarum et tempestatum sydus est . . . . oritur autem idem Arcturus ante xv Kal. Octobres, atque exinde pluviæ incipiunt; quod ipse aperuit dicendo,

> Hîc sterilem exiguus ne deserat humor arenam.

Arcturum autem pluviarum et tempestatum esse auctorem et Plautus ostendit in Rudente (Prolog. 69) cum eumdem ipsum dicentem facit,

> Increpui hybernum et fluctus movi maritumos.
> Vehemens sum exoriens; quom occido vehementior [h].

Plutarch has made use of this ἐπισημασία, historically, to account for the bad weather encountered by Dion on his way to Sicily from the island of Zakynthus, soon after the lunar eclipse, August 9, B.C. 357 [i]: and Apollonius Rhodius, κατ' οἰκονομίαν, to account for the storm which wrecked the sons of Phrixus on the island of Mars, just after the arrival of the Argonauts also there—

[a] Theophr. De Causis, 1.13. § 7. 360.
[aa] De Signis Pluviarum, vi. cap. i. § 23. 788.
[b] De Causis, v. 10. § 1. 561.
[c] Vegetius, v. 9.
[d] Ampelius, Liber Memorialis, ii. p. 157.
[e] H. N. ii. 39. cf. xviii. 74. p. 258.
[f] De Ostentis, 7, 281. 22.
[g] Georgica, i. 67.
[h] Cf. Georgica, i. 204–207. and the Comm. of Servius.
[i] Dion, xxv.

Καὶ δὴ ἔσαν νήσοιο μαλὰ σχεδὸν ἤματι κείνῳ·
Ζεὺς δ' ἀνέμου βορέαο μένος κίνησεν ἀῆναι,
ὕδατι σημαίνων διερὴν ὁδὸν Ἀρκτούροιο[k].

on which the Scholia: Δεικνὺς τὴν ἑῴαν ἐπιτολὴν τοῦ Ἀρκτούρου Βορέαν ἐποίησε πνεῖν, ὅπως ῥᾳδίως ὄμβρος καὶ ταραχὴ γένηται ...τοῦτο δὲ ἔφη, ἐπεὶ κατὰ τὴν ἐπιτολὴν τοῦ Ἀρκτούρου σφοδροὶ καταχεύονται ὄμβροι, ὥς φησι Δημόκριτος, ἐν τῇ περὶ Ἀστρονομίας, καὶ Ἄρατος·

φράζεσθαι δ' αἰεὶ μεμνημένος Ἀρκτούροιο
κ', τ. λ.

iii. Rain is described as a concomitant of the Πλειάδων δύσις. Ἡ δὲ ψώρα μάλιστα γίνεται, observes Theophrastus[l], ὅταν ὕδωρ ἐπὶ Πλειάδι γένηται. μὴ πολύ—Τὴν ψώραν οἴονταί τινες γίνεσθαι καὶ ἄλλως, οἷον ὅταν ὕδωρ ἐπὶ Πλειάδι γένηται μὴ πολύ[m]—Δεξάμενοι τὸ ἐπὶ τῷ ἄστρῳ ὕδωρ[n]—on the *seventh* day too after the setting: Ἐπιγίνεσθαι γὰρ ὕδατα καὶ πολλὰ τῇ ἑβδόμῃ μετὰ τὴν δύσιν[o]. Euctemon, apud Geminum, Nov. 22, *twelve* days after *his* date of the δύσις has, Hyades occidunt, et adhuc pluit: implying that it had begun to rain before. Columella has the δύσις Nov. 8 Roman, and *seven* days after, Nov. 15 Roman, Aquilo, interdum Auster cum pluvia[p].

Νὺξ μακρὴ καὶ χεῖμα, μέσην δ' ἐπὶ Πλειάδα δύνει,
κἀγὼ γὰρ προθύροις νείσσομαι ὑόμενος[q].

iv. Aristotle[r]: Ὁμοίως δὲ καὶ μετὰ τὰς χειμερινὰς τροπὰς πνέουσιν οἱ ὀρνιθίαι· καὶ γὰρ οὗτοι ἐτησίαι εἰσὶν ἀσθενεῖς· ἐλάττους δὲ καὶ ὀψιαίτεροι τῶν ἐτησίων πνέουσιν· ἑβδομηκοστῇ γὰρ ἄρχονται πνεῖν διὰ τὸ πόρρω ὄντα τὸν ἥλιον ἐνισχύειν ἧττον. Pliny dates these winds die lxi° post brumam[s]; as if he had read the 61st day in Aristotle, instead of the 71st (ξα' instead of οα').* By Euctemon also and Callippus, in Geminus, the ornithiæ

* But he supposes this same wind, so setting in on the 61st day post brumam, to blow *nine* days, that is, to the 70th day (post brumam) so that these two statements would so far be equivalent to Aristotle's of the 70th day; only that the latter clearly makes this 70th day the first, not the last, of the blowing of these ornithian winds. Democritus, in Geminus, dated these ornithiæ on the 14th of Ichthyon, March 7, for nine days.

k ii. 1099. cf. iii. 325–328. Hyginus Fabb. xxi. Phrixi filii.

l Histor. Plant. iv. 14. 5. 165.

m De Causis Plant. v. 9. § 12. cf. iii. 7, § 10.

n Ibid. iii. 4. § 1.

o iii. 23. § 1. cf. Pliny, H. N. xviii. 56. p. 182.

p De Re Rust. xi. ii. 84 and 88.

q Anthologia, i. 148: Asclepiades, xxiii.

r Meteorologica, ii. 5. p. 53. 17.

s H. N. ii. 47. cf. 48.

are dated Feb. 23, the 61st day from Dec. 25, their date of the solstice. The 70th day from Dec. 25 would be March 4. By Eudoxus, they are dated Ichthyon 4, Feb. 25; continuing to blow 30 days, i. e. to March 27, within two days of his date of the vernal equinox, the 6th of Krion, March 29.

v. Geoponica[t]: Δημόκριτος δὲ καὶ Ἀπουλήϊός φασι τοιοῦτον χρὴ προσδοκᾷν ἔσεσθαι τὸν χειμῶνα ὁποία ἔσται ἡ ἡμέρα τῆς ἑορτῆς ἣν οἱ Ῥωμαῖοι Βροῦμα καλοῦσι, τουτέστιν ἡ τετάρτη καὶ εἰκοστὴ τοῦ Δίου μηνὸς ἤτοι Νοεμβρίου[v]. What Democritus really taught on this point appears to be correctly stated by Pliny[x]; Democritus talem futuram hiemem arbitratur, qualis fuerit brumæ dies, et circa eam *terni*. item solstitio ætatem. And that his date of the winter solstice was probably Dec. 25, may be collected from Claudius Thuscus[y], on Nov. 25: Ὁ ἥλιος ἐπὶ τῆς πρώτης μοίρας τοῦ Τοξότου, and Lydus, De Mensibus[z], of the same day, Ὁ Δημόκριτος λέγει τὸν ἥλιον Τοξότῃ γίνεσθαι.

vi. Aristotle[a]: Ἔστι δὲ καὶ ἡ μετὰ τὰς χειμερινὰς τροπὰς πεντεκαιδεκάτη νότιος, διὰ τὸ τὰς μὲν τροπὰς ἀρχήν τινα εἶναι, κινεῖν δὲ τὸν καθ' αὐτὸν (ita leg.) μάλιστα ἀέρα τὸν ἥλιον...οὐκ εὐθὺ δὲ ἀπὸ τροπῶν ποιεῖ τοῦτο...ἀλλ' ἐν τῇ πεντεκαιδεκάτῃ κ', τ. λ. Theophrastus[b]: Ἡ πέμπτη καὶ δεκάτη ἀπὸ τροπῶν τῶν χειμερινῶν ὡς τὰ πολλὰ νότιος. Democritus, apud Geminum, January 5, the *twelfth* day after Dec. 25, has, Auster flat; Euctemon, Jan. 7, the fourteenth day after, has, Auster multus flat hybernus per mare, and Jan. 9, the sixteenth day after, has, Auster hybernus per mare: Callippus, January 8, the *fifteenth* day after, has Auster—so that *his* ἐπισημασία was most probably intended in this instance.

t i. 5. p. 8.

v Cf. i. 1. p. 4: ἡ δὲ τῶν Βρούμων ἑορτή ἐστι τῇ πρὸ ὀκτὼ καλανδῶν Δεκεμβρίων.

x H. N. xviii. 62. 203.

y Lydus, Opera, 379. l. 1.

z iv. § 93.

a Opp. ii. 941. 13 b. Problemata, xxvi. 12.

b vi. cap. 2. § 5. 790, 791. De Signis.

CHAPTER II.

On the Lunar Calendar of Meton.

SECTION I.—*On the circumstances of similarity between the Metonic Cycle and the Octaëteric one of Solon.*

The cycle of Meton, its epoch, its laws and administration, is a subject which long since engaged the attention of learned men: and if the conclusions to which they have generally come, respecting its nature and constitution, may be taken for granted, we have only to state them, to see that there were many points of resemblance between this cycle and the old Octaëteric one of Solon, too remarkable to be accounted for by a merely accidental coincidence *.

i. The number of solar and lunar years in one Metonic cycle was nineteen; and the number in two cycles of eight years and three years of a third, was nineteen also. ii. The number of lunar months in the Metonic cycle was 235; and the number in two cycles of eight years, and the first three

* The lunar and solar cycle of nineteen years, as adapted above all others to the constant decursus of mean lunar time in mean solar, in the sense of Julian, is so commonly called the Metonic, that it may well be presumed every one was agreed at present to consider Meton the discoverer of it, and the first who reduced it to practice. This prejudice is easily accounted for by the influence of classical associations; for the name of Meton has been handed down from classical antiquity as that of the first author of a cycle of this kind. And Meton might have been actually the first of the Greeks who contrived such a cycle. And yet, when we consider how much older than his time the use of this cycle really was in other parts of the world, we could not undertake to say it was improbable, much less impossible, that even he might have derived the first idea of it from some other quarter. There was a 19 years' cycle in Egypt, some centuries older than Meton. Of the history of this cycle in general, see our Fasti Catholici, i. 66: 108 sqq: 579–584: ii. 87, 88: 90–96: iv. 1–30: 31–47: 217–237. In the absence however of positive testimony to the contrary, it is only fair that we should give him credit for the discovery, as both his contemporaries and posterity among the Greeks appear to have done; and that being assumed, all we have to do is to explain, if possible, the mode in which he might have been led to it, and even to the enucleation of the enneakaidecaëteris itself, out of the old and preexisting octaëteris.

years of a third, was the same (198+37 or 235) also. iii. The number, the distribution, the place of the intercalary months in one Metonic cycle of 19 years, were exactly the same as in two cycles of eight years in sequence, and the first three years of a third, as the following scheme will shew: in which the intercalary years are marked with the asterisk.

Comparison of the order and succession of the Intercalary month in the first 19 *years of one and the same Octaëteric period, and in one Metonic cycle.*

Octaëteric Period.		Metonic Cycle.	
Cycle i. Year	i	Cycle i. Year	i
	ii		ii
	*iii		*iii
	iv		iv
	*v		*v
	vi		vi
	vii		vii
	*viii		*viii
Cycle ii. Year	i	Cycle i. Year	ix
	ii		x
	*iii		*xi
	iv		xii
	*v		*xiii
	vi		xiv
	vii		xv
	*viii		*xvi
Cycle iii. Year	i	Cycle i. Year	xvii
	ii		xviii
	*iii		*xix

So far then the two cycles would seem to have been altogether the same; though there was still a difference between them, which does not appear on the face of this comparison, viz. that the sum of days in these first 19 years of one and the same Octaëteric period was 6936, that in the corresponding 19 years of the Metonic cycle was 6940. The circumstances of resemblance notwithstanding, thus pointed out, are real, and they are much too critical and important to be resolvable into accident. They argue that the cycle of Meton, *mutatis mutandis*, might have been derived from the old octaëteric cycle, and probably was so. And when we know further that the first year of the first cycle of Meton, and the first year of the old octaëteric cycle, were absolutely the same, that the cycle of Meton took up and continued the old octaëteric cycle, just as it was entering on its second period, this presumption of the probable connection of the one with the other, even in its conception and derivation, is much strengthened. It remains then only to shew by what changes, or modifications, the Metonic Cycle might have been so obtained from the Octaëteris of Solon; retaining the general resemblance to its original, just pointed out, yet avoiding the imperfections inherent in it also.

SECTION II.—*On the discovery of the Metonic Cycle; and the mode in which it might have been derived even from the Octaëteris of Solon.*

If Meton was actually engaged for any length of time, before the publication of his calendar, on a series of solar observations, intended to determine the Solar Epoch of his correction, it is scarcely to be supposed that he was not attending, for the same length of time and with the same diligence and closeness, to the phenomena of the moon. According to Geminus, the phasis, or first visible appearance of the moon after the change, was sometimes as early as the first of the month, by the calendar, and sometimes as late as the third. Ταχίστη μὲν γὰρ φαίνεται ἡ σελήνη μηνοειδὴς τῇ νουμηνίᾳ βραδυτάτη δὲ τῇ τρίτῃ[c]: but it should be remembered that, in *his* time[d], the seat of the new moons, even in the Callippic correction, was the τριακὰς, not the νουμηνία. His earliest term for the phasis therefore must have been properly the *second* day after the change, some time in the course of the second νυχθήμερον from the conjunction. And this may be assumed as the probable date of the phasis in Meton's time, especially for the clear sky of Attica, and so elevated a place of observation as the summit of Mount Lycabettus. It was possible therefore, and even probable, that for this climate, and on this locality, the new moons might have been regularly visible, for any length of time, on the second day after the change; though, to a practised eye, familiar with such

[c] Cap. vii. Uranolog. 40 A. [d] Cf. in F. Cath. ii. 451.

phenomena, their appearance, even when three or four days old, would be a sufficient clue to the true date of the change.

By means then of a series of observations of this kind (in which too it would be almost absurd to suppose Meton must not have been engaged, before the publication of his calendar) it was possible that even 235 new moons might have been noted and set down, each under its proper date in the calendar for the time being. No one could undertake to say that 235 such observations were more than the same person could be supposed to have made; or that, though these could not have taken up less than *nineteen* years, that nineteen years was a greater length of time than Meton could reasonably be assumed to have devoted to his discovery. 235 lunar phenomena of this kind however would be the exact number contained in one Metonic cycle. 235 new moons, both in themselves, and in terms of the calendar for the time being, having been once ascertained, no one can deny that the Metonic cycle must have been discovered.

It is far from improbable however, supposing Meton really the author of this discovery among the Greeks, that he arrived at it by a much more summary process, and through the old octaëteric cycle; after a manner, which we will proceed briefly to explain: for that his cycle was *a priori* capable of being enucleated from the octaëteric, the points of agreement between them, which we alluded to supra, in our opinion are competent to prove.

In order then to this discovery, two matters of fact only would require to be previously known. i. Supposing the decursus of the cycle, like that of the octaëteris of Solon, to set out in the first year of the proper Julian cycle of leap year *, the calendar epoch of the fourth year of the decursus must be three days behind that of the first, the proper solar and lunar epoch of the cycle itself. ii. The decursus of the

* It is necessary to make this distinction, because, if one of these three years is leapyear in the Julian cycle, the sum of the epacts in that case will be 34 days, instead of 33: and the epoch of the fourth year will be *four* days behind that of the first, instead of *three*. There is no lunar bissext in the administration of the octaëteric cycle. Cf. our Origines Kal. Ital. iv. 327: also the Introduction to the Tables of the Fasti, part ii. chap. i. sect. iii. page 82–84.

cycle being regularly followed through the first two cycles, or first sixteen years of the period, the true lunar epoch of the 17th year must be three days higher than the solar; that is, than the true solar epoch of the cycle perpetually, and, in the first year of the decursus of the period, the true lunar epoch also.

Now of neither of these facts could there be any doubt in the time of Meton. As to the first, it follows from the proportion of annual lunar to annual solar, in the sense of Julian, time, in any lunar and solar (in the sense of Julian) cycle whatsoever; for the amount of the recession in three lunar years of 354 days each, on three Julian of 365 days each, (that is, the sum of the epacts at the end of the third year, and the beginning of the fourth,) could not be less than 33 days. And though the intercalation of a month of 30 days at the end of the third year would reduce this sum to three days, still the calendar epoch of the fourth year must be three days behind that of the first, the true solar epoch of the cycle perpetually, and in the first year of its decursus the true lunar epoch also. As to the second, it was a necessary consequence of the principles and assumptions of the octaëteric cycle itself, as we shewed more at large in the proper place[c]; and even though this particular tendency of the true lunar time of the period to rise on the nominal or calendar time, at the rate of three days for every two cycles, was not known of and calculated upon beforehand, in the time of Solon, as we believe it to have been[c], it must infallibly have been discovered and become generally known by the time of Meton.

Now from these two facts laid together, it would follow as a corollary, that the true lunar epoch of the twentieth year of the decursus of a given octaëteric period, and the true solar epoch of the period, (the true lunar, as well as the solar, epoch of the period,) must be absolutely one and the same. For by the second of these laws, the true lunar epoch of the 17th year must be three days higher than the lunar epoch of the first year; and by the first, the true lunar epoch of the 20th year must be three days lower than the true lunar epoch of the 17th. If so, the true lunar epoch of the 20th

[c] Supra, p. 34 sqq.

year, and the solar epoch of the first year, (that is, the solar epoch of the period, and if the solar, the true lunar also,) must be the same. The following scheme will make this clear.

True lunar and solar epoch of the *first* year, cycle i. 1...	Jan. 19.
True lunar epoch of the seventeenth year, cycle ii. 1. ..	Jan. 22.
True lunar epoch of the twentieth year, cycle ii. 4. ..	Jan. 19.

When this coincidence however had once been noticed, the Metonic cycle had been discovered. The number of solar and lunar years, necessary to bring about this *ἀποκατάστασις,* it would thus be perceived, was neither more nor less than 19, the number contained in *two* octaëteric cycles, and three years more of a *third.* The number of lunar months, necessary to the same effect, it would be seen, was exactly 235; the number contained in two octaëteric cycles ($99 \times 2 = 198$), and the first three years of a third, 37. The proper mode of distributing these months, whether ordinary of their kind, or extraordinary, would have been discovered also. The number of extra or intercalary months in order to the effect, it would be seen at once, could be neither more nor less than the number contained in the first nineteen years of a given octaëteric period, i. e. seven in all; three in the first eight years, three in the second, and one in the remaining three. The places too wherein to insert these months, so as most naturally to contribute to the desired effect, would have been practically discovered also, from the rule of the octaëteric cycle; which there would be every inducement *a priori* to retain in the cycle of 19 years.

We thus see both how the Metonic cycle of 19 years might have been obtained by just and necessary inference from the octaëteric one of Solon, and also why, if so obtained, it could not fail to retain more or less of the impress of its original; and consequently to exhibit externally those marks of resemblance which we began with pointing out. It remains only to shew by what peculiar contrivance the new cycle, while borrowing so much of its own constitution internally from the old one, and exhibiting so general a resemblance to it externally, was yet enabled to avoid the defects inherent in, and inseparably connected with, that.

SECTION III.—*On the means adopted by Meton to remedy in his own Cycle the inherent defects of the Octaëteric.*

i. Lunar Standard of the Cycle of Meton.

Both the old Octaëteris of Solon, and the Enneakaidecaëteris of Meton, being a lunæsolar period in general, in which a certain cycle of the solar momenta and a certain cycle of the lunar were combined, and adjusted together, on certain principles; with regard to the former, the solar standard assumed by the Octaëteris was nearer to the truth of nature than that which was assumed in the Enneakaidecaëteris: the former having been the mean Julian; the latter $\frac{1}{76}$ of a day and a night greater than the mean Julian. Both these standards were excessive, in comparison of the true mean standard of the natural solar, or tropical year, which we assume to be correctly represented by that of our own Fasti[f]: but the latter more so than the former: so much so that an element of difference was thereby introduced into the Metonic cycle, which would infallibly produce the same anticipation of a day and a night in 76 years, in that, which it would require 129 years to produce in the octaëteric cycle.

But with regard to the lunar standard, assumed in each respectively, the state of the case was widely different. The lunar standard assumed in the octaëteric cycle was 29 d. 12 h. 21 min. 19 sec. of mean solar time[g]: an assumption involving an error of defect of 1 d. 12 h. at least in every cycle, and of three days in every two cycles. And this being the proper defect of the old cycle, against which more than any thing else Meton had to provide in the new, the first thing necessary for that purpose would be a correction of this defective lunar standard. And though the actual standard which he adopted in its stead has not been handed down by the ancients in terms, it is easy to obtain it from his own cycle. The number of days in four of his cycles was one day more than the number contained in 76 mean Julian years; and *this* being 27 759, *that* must have been 27 760.

[f] Vide Fasti Catholici, i. 78: ii. 27–35. Prolegomena to the Origines Kalendariæ Italicæ, cxix. sqq.

[g] See supra, page 35.

The number of months, contained in four of his cycles, was 235 × 4, or 940. If then we divide the number of days in four of his cycles, 27 760, by the number of months in them also, the quotient will be the mean lunar standard of the cycle, 29 d. 12 h. 45 m. 57 sec. 26 th. 48·51 fourths, or 29 d. 12 h. 45 m. 57·4468 sec.

ii. Distribution of the months, as *Pleni* and *Cavi*, in the Cycle of Meton.

As another consequence too of this necessity of guarding his own cycle against the characteristic defect of the octaëteric, Meton would have to provide, first, that the first sixteen years of the new cycle, supposed to begin and proceed simultaneously with the first sixteen of a given octaëteric period, should contain two days more at least than the number contained in the latter; that so the epoch of the seventeenth year, instead of being three days behind the true lunar date at the same period, should not be more than one day behind it, at the utmost: and secondly, that the three last years of his cycle should contain neither more nor less than the number of days necessary to bring about the ἀποκατάστασις of the lunar and solar momenta, at the beginning of the twentieth year. Both these however were questions of detail, not of first principles; and it is obvious that the readiest and most effectual means to the attainment of each of these ends would probably appear to be those which he actually adopted; a fresh distribution of the *menses pleni* and *cavi*, and a fresh determination and arrangement of the exemtile days.

The fourth part of 27 760 is 6940. Such consequently was the number of days and nights in one Metonic cycle of 19 years. The number of lunations in one cycle was 235. Were each of these supposed to be 30 days long, they would contain 7050 in all; 110 more than 6940. It is manifest, therefore, that of the 235 mean or actual lunar months which made up one cycle of Meton, 110 must be imperfect, *cavi*, or *hollow*, consisting of 29 days each, not 30; and therefore, the remainder (125) must be perfect, *pleni*, or *full*, consisting of 30 days each.

The next question consequently would be that of the *order* of these months; whether they should precede and follow each other alternately, as in the old Octaëteric Cycle, or be arranged in some other way. Now, to have retained the old arrangement would have been attended with this inconvenience; viz. that the first 220 months indeed would have been alternately *pleni* and *cavi*, or *cavi* and *pleni*, but the last 15 must all have been *pleni* in succession*. And that would be so repugnant to the constitution and character even of a nominal lunar year, that the arrangement which led to such an effect at last could not with propriety be adopted.

As the first step then to the discovery of some other, Meton divided the number of days in one of his cycles, 6940, by 110—and finding the quotient to be 63 (with a remainder only of 10), he determined to take out of the reckoning every 63rd day, from the beginning to the end of the cycle; by which means some 110 months out of the 235 would be rendered *cavi*, or hollow, and 110 days would be deducted from the sum total contained in 235 full months, 7050; and the rest of the months (125 out of 235) would be left *pleni* or full. By virtue of this new rule however, no *one* day in the hollow months could be perpetually exemtile in the new cycle, as the 29th had been in the old; only that day in every instance on which the 63rd, reckoned perpetually from the beginning to the end of the cycle, happened to fall: which gave Geminus occasion to say[h], Δι' ἡμερῶν ἄρα ξγ′ ἐξαιρέσιμον τὴν ἡμέραν ἄγειν δεῖ ἐν αὐτῇ τῇ περιόδῳ· οὐδὲ γίνεται ἐξαιρέσιμος ἡ τριακὰς διὰ παντὸς, ἀλλ' ἡ διὰ τῶν ξγ′ ἡμερῶν πίπτουσα ἐξαιρέσιμος λέγεται.

Let us now proceed to inquire how this expedient answered its purpose, as a means of protecting the new cycle against the peculiar defect of the old. In the first place, whereas in

*

110 × 29	=	3190
110 × 30	=	3300
220 of 29 and 30 alt.		6490
15 × 30	=	450
		6940

[h] Cap. vi. Uranol. 38 B.

the old Octaëteric calendar two cycles could contain only 102 *menses pleni*, out of 198, by means of this new distribution, in the first sixteen years of the Metonic Cycle, out of the same number of months of both kinds in general, 104 were *pleni;* and consequently while the sum total of days in the former could not exceed 5844, in the latter it was 5846 *. The epoch of the 17th year in the decursus of the Metonic Cycle consequently was two days higher than that of the 17th year of the decursus of the corresponding Octaëteric Period. The defect inherent in the old cycle therefore was so far avoided in the new one; and it holds as a general effect, in the administration of the cycle of Meton, that the epoch of its 17th year is always two days higher that that of its first—the proper solar epoch of the cycle; whatsoever that may be.

Secondly, with regard to the remaining three years of his cycle; the length of these respectively was 354, 355, and 385 days: the number of days contained in them collectively was 1094. The number of days contained in three Julian years, if each of these is 365 days long, is 1095, if one of them is a leap year, is 1096: and as that was *de facto* the case with the last year of the first cycle of Meton, B. C. 414–413, the last three years of that cycle must have contained two days less than the three corresponding Julian years†. It would follow

*

104 × 30	=	3120 days
94 × 29	=	2726
104 and 94, of 30 and 29 alt.		5846 days
2922 × 2	=	5844
Diff.		2

† It must be observed however that this coincidence was peculiar to the last three years of the first, the third, and the fourth, of his Cycles. It did not hold good of the last three of the second: the consequence of which was that the last three years of this second cycle containing *de facto* only one day less than the three corresponding Julian years, the Julian epoch of the third cycle was one day lower than that of the 17th year of the second cycle; and both the Julian epoch of the third cycle and that of the fourth were one day higher than that of the first, and that of the second. The Julian epoch for instance of the first and second cycles of Meton in the first Callippic Period of 76 years was July 16, that of the third and the fourth was July 17.

from this fact that the Julian date of his 20th year would be two days lower than that of his 17th, and this being two days higher than the Julian date of his first year, the Julian date of his 20th year, the Julian date of his second cycle, would be that of the first year itself. The ἀποκατάστασις of the proper lunar and the proper solar epoch of his cycle, to the same relation to each other, and to any thing else to which both might have been referrible in common, from the first, at the beginning of his second cycle, would thus be complete.

Section IV.—*On the Lunar Epoch of Meton, or the proper Julian date of his Lunar Calendar.*

After these explanations of the mode in which the Metonic Cycle might have been, and probably was, obtained from the old Octaëteric Cycle of Solon, and of the changes introduced into the administration and details of the latter, without giving up its general character and external appearance, we may now proceed to the other questions necessary to clear up the history of this correction. One of these is that of its epoch; by which we mean the Julian date of its first new moon. It is agreed that this first new moon was that of Hecatombæon, B. C. 432—which month Meton determined to make the head of his calendar, instead of Gamelion. It is agreed too that the proper Julian date of this new moon of Hecatombæon, B. C. 432, was one of these two, July 15 at midnight, or July 16 at midnight; or to describe it according to the Attic rule—July 14 at sunset, or July 15 at sunset. Between these two terms the opinions of the learned have varied; and great names, such as Scaliger, Bishop Horsley, and others have declared for the former, and equally illustrious ones, Petavius, Dodwell, Ideler, and others, in favour of the latter.

Between these the testimony of the old Octaëteric Cycle (still in use at Athens up to the date of the Metonic Correction), and the conclusion just established, that the Metonic Cycle itself was probably derived from it, would seem to make in favour of the former; for we have only to turn to the scheme of the Attic Calendar, B. C. 432, Period ii. 1. Cycle i. 1. of the old Octaëteris, exhibited supra[i], to see that the first of

[i] Page 449.

Hecatombæon, of that time, was actually falling July 15 at midnight according to the Julian rule, July 14 at sunset according to the Attic. Yet notwithstanding this we are clearly of opinion that the true Julian epoch of the Metonic Cycle was July 16 reckoned from midnight, according to the Julian rule, July 15 reckoned from sunset, according to the Attic.

On this question, we must begin with reminding the reader of what was shewn on a former occasion, when we were treating of the Octaëteric Cycle[k], that even, after making every allowance for the gradual advance of the lunar on the calendar dates in that cycle, the mean new moons at the end of the Period of 160 years would not be found to have returned to their original dates in the calendar; the consequence of which would be that even then a correction would be wanting, to qualify the cycle for the decursus of another Period: and a correction amounting to a day. And though, in the case of other calendars, which were allowed to pass into a second Cyclical Period, and even into a third, before the Metonic Cycle was substituted for the Octaëteric, proof may be adduced that such a correction must have been administered, preliminary to the decursus of every fresh Period of 160 years, by raising the epoch of the cycle *one* day; there is no proof that any thing of this kind was done in the administration of the old Octaëteris of Solon, when it had run through its first Period, and was going to enter on its second. But, as this is an important matter of fact, and one which *a priori* may appear improbable, it may not be amiss to enter upon the explanation and proof of it somewhat particularly.

In the first place, as we have seen from the testimony of Thucydides[l], that the old calendar was still in use, and the official year was still regulated by it, B. C. 431, at the beginning of the Peloponnesian war; so have we seen reason also to infer that the day of the surprise of Platæa at that time was both the first of the month in the calendar reckoning, and the last of the month in the lunar; an anomaly which there was no means of explaining so natural and probable as this; That the civil calendar had now got into its *second* cyclical period, yet without any correction of the *epoch*: the

[k] Dissertation i. chapter ii. sect. vii. page 39 sqq. [l] Diss. i. ch. v. sect. ii. sqq.

consequence of which would be that the *first* day of the month, at this time, would be falling on the *last* of the moon.

Again, in the course of the same year, mention occurs in Thucydides[m] of an eclipse of the sun: Τοῦ δ' αὐτοῦ θέρους νουμηνίᾳ κατὰ σελήνην, ὥσπερ καὶ μόνον δοκεῖ εἶναι γίγνεσθαι δυνατὸν, ὁ ἥλιος ἐξέλιπε μετὰ μεσημβρίαν, καὶ πάλιν ἀνεπληρώθη, γενόμενος μηνοειδὴς καὶ ἀστέρων τινῶν ἐκφανέντων. This qualification of the day, νουμηνίᾳ κατὰ σελήνην κ, τ. λ. has struck chronologers as something remarkable; particularly when compared with the next instance of the same kind of allusion—Περὶ νουμηνίαν[n], as before—but not with this addition of *κατὰ σελήνην*, as before also.

The eclipse intended on the former occasion was that of August 3, B. C. 431. It is an obvious inference from Thucydides' mode of describing its date, that it did not happen on the first of the *month*—though necessarily on the first of the *moon*. The numenia of Metageitnion indeed, in the second year even of the first cycle of Meton (B. C. 431) fell on August 4; i. e. a day later than this eclipse: but, if Thucydides intended any contrast between the civil numenia and the natural, he could not have intended it of the numeniæ of the Metonic cycle, but only of those of the octaëteric; because this latter was the only form of the civil calendar in use, B. C. 431—as he himself has given us the means of proving. Now, by the old octaëteric cycle, Period ii. i. 2, supposing no correction to have been administered to the epoch at the ingress of this period, B. C. 432, the numenia of Metageitnion would fall on August 2, the day before the eclipse; and the contrast implied by Thucydides would actually hold good. Supposing a correction administered, and the first of Gamelion, Cycle i. 1, to have been raised from Jan. 19 to Jan. 20, then the numenia of Metageitnion, Cycle i. 2, must have fallen on August 3, B. C. 431, the day of the eclipse itself; and any distinction between the civil numenia and the true, under such circumstances, must have been superfluous, and even false.

Lastly, it has been seen, that the date of the summer solstice, determined by Meton, and assumed as the epoch of his

[m] ii. 28. [n] iv. 52.

solar and sidereal calendar, B. C. 432, in terms of the Attic calendar of the time being, was Skirrhophorion 13, June 27: and Skirrhophorion 13, Period ii. 1, Cycle i. 1, falling on June 27, B. C. 432—Skirrhophorion 1 must have fallen on June 15, and Gamelion 1 on Jan. 19.

It is demonstratively certain then that up to the ingress of Period ii of the old cycle, Gamelion 1, Cycle xx. 1, B. C. 432, no correction could yet have been administered to the epoch of the cycle, whatsoever might have been required: and if none was administered then, there is no reason to suppose any would be afterwards. The necessity however of such a correction being undeniable; the question is, Whether it could be unknown to Meton? and whether, if known to Meton, though overlooked by the rest of the Athenians, it could be neglected by him? As to its being unknown to Meton; the nature of the octaëteric cycle, and its relations to the moon, were too well understood long before his time, to allow of that supposition: and besides this, in the course of the last sixteen years of the first period of the cycle, for which Meton, as we have seen every reason to conclude, was employed in watching the moon, and the calendar also in its relation to the moon, there were many eclipses, both solar and lunar (as the Tables of Pingré shew), from which it was certainly to be collected that, as the period was drawing nearer and nearer to its close, the new and the full moons of the calendar were getting more and more behind those of nature, first by 12 h. or by 18 h., and at last by as much as 24 h. So that it must easily have been foreseen that, when the time should arrive for the ingress of both together into the decursus of a second period, the former would require to be raised a day, to set them at par with the latter.

On this principle, it would be clear to a careful and accurate observer like Meton, that the date of the month Hecatombæon, which he intended to make the head of his lunar calendar, would require to be raised one day, from July 14 at 18 h. to July 15 at 18 h.—from July 15 at midnight to July 16 at midnight, B. C. 432. And it is no slight confirmation of these reasonings as to what *must* have been done by him, at this time, because known by him to require to be done—that the epoch of his lunar cycle, thus supposed attached to the corrected epoch of Hecatombæon in the old calendar, Period ii. 1, Cycle i. 1, was attached to the *true* new moon of July, B. C. 432—reckoned whether from sunset, according to the Attic rule, or from midnight, according to the Julian *.

The proper Julian date of the cycle is after all a question of fact, the decision of which might safely be left to that review of dates in terms of the calendar of Meton, which we hope to institute before we take our leave of this subject; the construction of the calendar, and its laws and administration having been such that, from a single authentic date given in terms, we are able to ascend to the epoch of all: and all these dates so analysed and traced back to their origin, are found to take their rise from this one Julian term, July 16 at midnight, according to the Julian rule, July 15 at 18 h. from midnight, according to the Attic, B. C. 432.

i. Many of these are dates of eclipses; than which none are more capable of being tested and verified, independent of testimony *ab extra*, by calculation merely. The earliest date of this kind, and the nearest to the epoch of the Metonic correction itself, is that of August 3, B. C. 431, to which we have already adverted. It is much to be questioned whether Thucydides would have spoken of the day of that eclipse as he did, if the epoch of the Metonic correction had been July 15, not July 16: for in that case, the numenia of Metageitnion, Cycle i. 2, by the rule of the cycle, must have fallen on August 3, the very day of the eclipse itself: and as Thucydides was no doubt aware of the existence of this correction, and of its having been publicly proposed the year before, though not yet adopted at Athens, he must have known also that, between the natural numenia and the civil, in a properly constructed and properly regulated calendar, at this very time there was no difference.

The next solar eclipse however, though dated περὶ νουμηνίαν

		h.	m.	s.	
* B. C. 432.					
Mean new moon,	July 15.	13	32	17	m. t. Greenwich.
	—— 15.	15	7	13	m. t. Athens.
True new moon,	July 15.	19	56	6	m. t. Greenwich.
	—— 15.	21	31	2	m. t. Athens.

also, is not dated *περὶ νουμηνίαν κατὰ σελήνην*. On the contrary, that by this *νουμηνία* he must have meant the *first* of the *civil* month, appears from his subjoining directly after, *καὶ τοῦ αὐτοῦ μηνὸς ἱσταμένου ἔπεισε* [o]. The notice belongs to the 8th year of the war, B. C. 424: and the context determines the eclipse in question to March 21, (the only solar eclipse in fact that year.) The thing to be observed is, that the Metonic Correction was now in use; as it was not, B. C. 431. I look then into the Metonic calendar, Cycle i. 8 Hecatombæon 1 July 29 at midn. B. C. 425: and I find the first of Elaphebolion, the ninth month, that year falling March 21 at midn. B. C. 424—the day of this eclipse: which can leave no doubt that the *νουμηνία*, specified as the date of this phenomenon in the 8th year of the war, must have been that of Elaphebolion, Cycle i. 8. The first of Elaphebolion, Cycle i. 8 being given, we can ascend from that to the first of Hecatombæon the same year, June 29 B. C. 429: and that being given, we can go back to the first of Hecatombæon, seven years before, July 16 (not July 15), at midn. B. C. 432.

ii. There was a correction of the calendar of Meton by Timocharis, a later astronomer; of which we shall have to give an account hereafter. We are in possession of a number of dates in terms of this correction, which prove that its epoch was July 1 at midn. B. C. 330; the same year indeed, but not the same day, as that of the Callippic correction. We hope to see too that this correction, in its effect on the calendar of Meton, was prospective. It simply proposed to apply the principle of the Callippic correction to that cycle from B. C. 330 forwards; and, consistently with its profession, it took its own epoch from the vulgar Metonic calendar for the time being: and its own epoch having been July 1 at midn. B. C. 330, that of the vulgar Metonic calendar, at the same time, must have been July 1 at midn. also.

Now B. C. 330 corresponded to Cycle vi. 8: and the epoch of Cycle vi. 8 having been July 1, that of Cycle ii. 8 must have been one day earlier, June 30: and the epoch of Cycle ii. 8 having been June 30, that of Cycle i. 1 must have been July 16.

[o] iv. 52.

One date in particular has been supplied from Timocharis[p]; of which, on account of its importance, a special consideration will be necessary; Pyanepsion 25, answering to Thoth 7, at 15 h. 7 m. from noon, Nab. 466, Nov. 9, at 3 h. 7 m. a. m. B. C. 283. It is capable of proof that this date was taken by him neither from his own correction, nor from the Callippic, but simply from the vulgar Metonic cycle of the time being, Cycle viii. 17, July 20 at midn. B. C. 283. The epoch of the 17th year of the viiith cycle being given, we can ascend from that to the epoch of the 17th of the ivth; and so on to the head of the whole decursus, Cycle i. 1, July 16 at midn., not July 15 at midn., B. C. 432.

iii. It is to be observed also, that dates are extant both in terms of the Attic Metonic calendar, and in those of other calendars for the time being; the earliest instance of which is that of the 14th of the Attic Elaphebolion, B. C. 423, compared with the 12th (or, as it should be, the 16th) of the Lacedemonian Gerastius; and the next, that of the 25th of the Attic Elaphebolion, B. C. 421, and the 27th of the Lacedemonian Artemisius: each implying the same thing; viz. that the civil reckoning at Sparta, for the time being, was two days behind that of Athens, at the same time. Now it may be proved that the epoch of this Spartan reckoning was taken directly from that of the old octaëteric cycle, B. C. 424: from whence it will follow that the epoch of the old octaëteric cycle, B. C. 424, was two days behind the Metonic, B. C. 424 also: and that could not have been the case B. C. 424, unless it had been one day behind that of the Metonic cycle, B. C. 432.

Section V.—*On the rule of Exemtion in the Cycle of Meton.*

The next thing for our consideration is the rule of Exemtion in the cycle of Meton. Our only authority for this at present is Geminus; and the rule itself was so peculiar, that, but for the express testimony thus handed down concerning it, very probably it would never have been divined. Nor indeed are the learned agreed about the meaning of this testimony itself; about the construction at least and interpretation of the words in which it has been exprest.

[p] Magna Compositio, vii. 3. Opp. ii. 24.

The passage of Geminus, which relates to this point, has been quoted supra[q]: *Δι' ἡμερῶν ἄρα ξγ' ἐξαιρέσιμον τὴν ἡμέραν ἄγειν δεῖ ἐν αὐτῇ τῇ περιόδῳ*: where, if there is any ambiguity, it resides in the phrase *δι' ἡμερῶν ἄρα ξγ'*—and affects the question, What number of days is to be understood thereby? whether 62 complete, which would make every 63d day exemtile, or 63 complete, which would make every 64th so.

In coming to a judgment on this question, regard should be had to the idiomatic use of similar phrases, of common occurrence in Greek authors; more particularly that of *δι' ἐννέα ἐτῶν*, applied to the octaëteric cycle, or to the cycle of any observance regulated by a period of *eight* years; that of *δι' ἐννέα ἡμερῶν*, by which the cycle of the nundinal day among the Romans (a cycle of *eight* days[r]) was commonly expressed in Greek; that of *διὰ πέντε ἐτῶν*, or *διὰ πέμπτου ἔτους*, applied to the cycle of games and observances regulated by a period of *four* years, such as the Olympic, the Panathenæa, the Pythia, and the like; and the phrase, *διὰ τριῶν ἐτῶν*, or *διὰ τρίτου ἔτους*, applied to others, which were diëteric, i. e. regulated by a period of two years, like the Nemea and the Isthmia of antiquity. In all these cases the number actually meant is *one* less than the number exprest. So long then as the text of Geminus in this instance continues unchallenged, it never can be considered a construction contrary to the idiom and usage of speech in such cases, to understand *δι' ἡμερῶν ξγ'*, as Dodwell did, of every 63d day *inclusive*, from the beginning to the end of the cycle.

On this principle, we should begin with counting 62 days from the *first* day of the *first* month in the *first* year of the cycle, before we marked any day for *exemtion;* and that would bring us from the 1st of Hecatombæon inclusive to the 2d of Boëdromion inclusive: and the day next to this, the 63d day from the first of the cycle inclusive, the 3d of Boëdromion, would be *exemtile.*

We should then count 62 days more from the *next* to this *first* exemtile day, the fourth of Boëdromion inclusive; which would bring us to the *fifth* of Mæmacterion inclusive, before we could note any other day for exemtion. But the day

[q] Page 485. [r] See our Origines Kalendariæ Italicæ, ii. 3.

after this, the 63d inclusive from Boëdromion 4 inclusive, the 6th of Mæmacterion, according to the rule by which we were proceeding, would be *exemtile,* and the *second* of its kind which had yet occurred.

Continuing in the same way, and repeating the same process, we should find the *third* exemtile day falling on the 9th of the seventh month, the 9th of Gamelion; the *fourth* on the 12th of the ninth, the 12th of Elaphebolion; the *fifth* on the 15th of the eleventh, the 15th of Thargelion: and these would be all which would occur in the first year of the cycle. The *sixth* exemtile day would be found falling on the 18th of the first month of the second year of the cycle, the 18th of Hecatombæon; the *seventh* on the 21st of the third, the 21st of Boëdromion; the *eighth* on the 24th of the fifth, the 24th of Mæmacterion; the *ninth* on the 27th of the seventh, the 27th of Gamelion; the *tenth* on the 30th or τριακὰς of the ninth, the 30th of Elaphebolion.

We should thus have run through the cycle of exemtile days from the first to the thirtieth of the month; and it would now be necessary to begin the process afresh, by counting sixty-two days from the 30th of Elaphebolion, exclusive, to the 2d of Skirrhophorion, inclusive, and noting the day after that, the 3d of Skirrhophorion in the second year of the cycle, for the *next* exemtile day, the *eleventh* in all, since the first beginning of the process.

And in this manner we should continue to proceed, reckoning 62 days afresh from the last exemtile day in each instance *exclusive*, and setting down the next in order to the 62d, for exemtion, perpetually; until we had gone through every month, in every year, the intercalary as well as the rest, and consequently had repeated the operation 110 times; the last day so noted (the 110th from the beginning of the process) being found to fall on the τριακὰς or 30th of the *ninth* month (the intercalary month being reckoned among the months of that year) in the 19th year of the cycle: the τριακὰς or 30th of Anthesterion, Cycle i. 19. And this would be the last case of exemtion in the cycle of Meton, according to his own rule; which admitted only of 110 exemtile days from first to last. It would be the last too in his cycle, even as subjected to the Callippic correction, for the first 57 years, or three cycles; but in the 76th year, the last year of every fourth cycle, the Callippic correction would assume *one* more exemtile day, the 111th from the beginning to the end of that cycle; the seat of which, according to the same principle as before, would be the *third* of the eleventh month, the *third* of Thargelion in the calendar of Meton, and the third of the eleventh month in any calendar constructed on the same principle as the Metonic, yet subject to the Callippic correction.

The following therefore is the Scheme of Exemtion in the Metonic Cycle of 19 years; which for that cycle will of course be perpetual, and the same in one period of 19 years as in another: for the Callippic Period of 76 years will require one more exemtile day in the fourth cycle of 19 years; and *that* the third of the last month but one in the last year of the cycle.

i. *Scheme of the order and succession of the Exemtile day through the Metonic Cycle of 19 years.*

	Months.		i.	ii.	iii.	iv.	v.	vi.	vii.	viii.	ix.	x.	xi.	xii.	xiii	xiv.	xv.	xvi.	xvii.	xviii	xix
	Sum of Exemtile days / Exemtile	110	5	6	6	6	6	6	5	7	5	6	6	6	6	6	6	6	6	5	5
i.	Hecatombæon			18		24		30		3		9	27	15		21					18
ii.	Metageitnion				6		12		18		24				3		9	27	15		
iii.	Boëdromion		3	21		27				6		12	30	18		24				3	21
iv.	Pyanepsion				9		15	3	21		27				6		12	30	18		
v.	Mæmacterion		6	24		30				9		15		21		27				6	24
vi.	Posideon	A			12		18	6	24		30		3		9		15		21		
—	Posideon	B			B		B			B 12			B		B			B 3			B 27
vii.	Gamelion		9	27	15		21					18	6	24	12	30				9	
viii.	Anthesterion					3		9	27	15							18	6	24		30
ix.	Elaphebolion		12	30	18		24				3	21	9	27	15					12	
x.	Munychion					6		12	30	18						3	21	9	27		
xi.	Thargelion		15		21		27				6	24	12	30	18					15	
xii.	Skirrhophorion			3		9		15		21						6	24	12	30		

ii. Remarks on the preceding Scheme.

i. It appears from this scheme that the exemtile day in the Cycle of Meton was always the 3rd, or the 6th, or the 9th, or the 12th, or the 15th, or the 18th, or the 21st, or the 24th, or the 27th, or the 30th, of some one of the *menses cavi*, or months which admitted of such a day at all.

ii. It appears also that the number of months in the constant decursus of the calendar, in which this cycle of the exemtile day was exhausted, was 21; the two first always *pleni*, the rest alternately *cavi* and *pleni*; in which respect the rule of alternation in the Cycle of Meton agreed with that of the old Octaëteric Cycle. It is observable also, that the *first* hollow month in *this* cycle was one of the *odd* months; and in the old Octaëteric Cycle the odd months were hollow, not the even ones.

iii. The first hollow month in this cycle being Boëdromion, and the first exemtile day by rule being the 3rd of Boëdromion, (only the day after the second,) there was no reason *a priori* why the particular exception, which had made the 2nd of this month perpetually exemtile in the old cycle, should not be retained in the new. And with respect to the fact of its having been so retained, not to urge that, as Meton was not acting by public authority, he could have no power to dispense with it, the testimony of Plutarch, referred to supra [s], ought to be decisive; for that testimony was first and properly given to the state of the case in the Metonic, not in the Octaëteric, Cycle. Consequently, though the 3rd of Boëdromion by rule would have been the first exemtile day in the first year of the cycle, there can be no doubt that, by the exception to the rule, the 2nd would be so in its stead; and in subsequent years of the cycle, as often as the exemtile day again fell in Boëdromion, and on whatsoever day it fell, the second of the month would always be assumed as exemtile in its stead. These years, it is seen from the scheme, would be the 2nd, the 4th, the 8th, the 10th, the 11th, the 12th, the 14th, the 18th, and the 19th.

iv. It appears also, that, by the new rule of exemtion, the day, which had been regularly exemtile in the old cycle, never

[s] Diss. i. ch. iii. sect. i. page 55.

could be so in this, viz. the 29th of the month; and that the 30th or τριακὰς, which in the old calendar had been specially reserved from exemtion, must have repeatedly been exemtile in the new. In reference to this latter fact, Geminus observed, in the sequel of the passage quoted supra: *Οὐδὲ γίνεται ἐξαιρέσιμος ἡ τριακὰς διὰ παντὸς, ἀλλ' ἡ διὰ τῶν ξγ' ἡμερῶν πίπτουσα ἐξαιρέσιμος λέγεται*: the *prima facie* construction of which words seems to imply that in his opinion the 30th always had been, or always should have been, the proper exemtile day in the hollow months. Nor is there any reason why Geminus might not have supposed no day so proper for exemtion as the 30th, in months which were really to have 29 days, though they might nominally have 30. But even that is probably not the true construction of these words. In his account of the Cycle of Meton, having premised that it consisted of 235 lunar months, he proceeded to observe that if each of these were supposed a month of 30 days, the sum total contained in the Cycle would be 7050—110 days more than the proper number, 6940. One day therefore must be subtracted from some 110 of these months: and that one day, it might be supposed *a priori* could be none so properly as the 30th, though *de facto* it was not always and *ex proposito* the 30th—but simply that day on which the 63rd, from the beginning to the end of the cycle, might happen to fall*.

We have no doubt that this is the true meaning of the observation in question; and consequently that it would be

* The triacas, or 30th of the month, was exemtile even in the Cycle of Meton once in every cycle of 21 months, like any other of the days on which the exemtion was liable to fall. The particular months and years in which this coincidence would hold good would be the following:

	Cycle.					
Year	ii.	Exemtile, the 30th or τριακὰς	of the		ix.	month.
—	iv.	..	..	..	v.	—
—	vi.	..	..	..	i.	—
—	vii.	..	..	..	x.	—
—	ix.	..	..	..	vi.	—
—	xi.	..	..	..	iii.	—
—	xii.	..	..	..	xi.	—
—	xiv.	..	..	..	vii.	—
—	xvi.	..	..	..	iv.	—
—	xvii.	..	..	..	xii.	—
—	xix.	..	..	..	ix. = viii.	—

a mistake to infer from it that either in the old Attic calendar, or in any other, different from the Metonic, with which Geminus was acquainted, the seat of the exemtile day had been the 30th, and not the 29th.

SECTION VI.—*On the scheme of Exemtile days in the Cycle of Meton, according to Mr. Ideler.*

The 110th exemtile day in the above scheme falling on the 30th of the ninth month in the last year of the cycle; the last of the *hollow* months in the cycle (which could not exceed 110 in all) would be *this* ninth* month of the 19th year of the cycle, the 231st from the beginning. Even after this however there would be four months more, to complete this last year, and to make up the sum of 235 lunations in all: and there being no exemtile day after the 30th of the 231st month, each of these four months would be a full month, and have 30 days.

At first sight this must appear an anomaly, and inconsistent with the nature and constitution of a lunar calendar; in which there could never be four months in succession, of 30 days each, without too great a departure from the truth of nature. In strictness however, the anomaly affected only the last two of these four: the first two, as following immediately after the completion of the xith cycle of the exemtile day, would be *full* at this period of the cycle as regularly, as under similar circumstances at any other period in the same. As to the last two, their occurrence at this period next after two of the same kind, which were full according to rule, may be an anomaly and a difficulty; but after all, it is an anomaly and a difficulty inseparable from the principles of the cycle itself; and not more objectionable *per se,* than its fundamental assumptions, which entailed an error of excess, amounting to a day, every 76 years.

A scheme of exemption indeed might be devised, even for

* We call this the ninth month, in this last year, though the month itself was Anthesterion, the 8th from Hecatombæon in the common years of the cycle. But the last year of the cycle was intercalary, and had a Posideon B; which in such years made Anthesterion *de facto* the *ninth* from Hecatombæon.

the Metonic cycle, which would avoid this particular anomaly at last, and yet appear to be consistent with the account of the actual rule in that respect, given by Geminus; viz. by making the 64th day from the beginning to the end of the cycle perpetually exemtile; or reckoning 63 days, not 62, between every two exemtile days, exclusive of each. And this is the scheme which Scaliger and Petavius would both have proposed, in preference to that of Dodwell, and which Mr. Ideler in our own time appears to have adopted in his Technical Chronology. It differs of course from that which we have given ourselves, and which in fact is Dodwell's [t]. For any more particular account of it, we refer to Mr. Ideler's own words [v] *. It is sufficient for our purpose at present, briefly to point out the objections to it.

In the first place, it is a fatal objection to this scheme, that it is founded on a mistaken construction of the words

* Mr. Ideler's account of it is very brief: "According to the principles hitherto developed," says he, "I have constructed the Metonic Canon, as given in the first Table of the Appendices to this chapter. I have begun it with two full months, because there was no reason to make the second month exemtile. I have then made the full and hollow months alternate; yet so that after eight alternations, two full months follow in succession, because of 32 months 17 must be full." Accordingly in the Table in question we have a cycle of 32 months, the first two of which are marked as months of 30 days, and the last thirty as months of 29 and 30 alternately, recurring successively, as often as the nature of the case admitted of it: but what days in each of these months of 29 days were actually exemtile in Mr. Ideler's scheme, does not appear from this very indefinite mode of exhibiting them.

It is manifest however, that a scheme of exemtion which began with assuming that every 64th day from the beginning to the end of the period of 19 years was to be exemtile, and proceeded consistently with that assumption from first to last, must have set out with making the 4th of the third month exemtile, and after that, the 8th, the 12th, the 16th, the 20th, the 24th, and the 28th—the 2nd, the 6th, the 10th, the 14th, the 18th, the 22nd, the 26th, and the 30th, of every other month, through the next thirty months, before the cycle of exemtile days, from the *fourth* to the *thirtieth* of the month, could be exhausted; and the scheme be in a condition to begin and proceed again in the same manner as before.

[t] Vide De Cyclis, 50. Dissert. i. sect. xxxvii. Cf. the Tables, p. 716 sqq. Also Scaliger, De Emend. ii. 78, 79.

[v] P. 334.

of Geminus, Δι' ἡμερῶν ἄρα ξγ' ἐξαιρέσιμον τὴν ἡμέραν ἄγειν δεῖ: a construction contrary to the Greek idiom in all such cases. Mr. Ideler asks, with respect to these words, "Now what does δι' ἡμερῶν ξγ' properly signify? Is every 63rd day from the beginning of the period, or every 64th, meant thereby? in other words, is the interval, between every two successive exemtile days, 62 or 63 days?" He then replies: "The preposition διὰ admits only of the latter interpretation, as well as the thing itself."

How the thing itself could prove that 63 days must have been meant, rather than 62, unless the words themselves implied it, we cannot understand; and as to the phrase itself, and the assertion that the preposition διὰ could admit of no other construction, it is strange that so good a Greek scholar as Mr. Ideler should have hazarded a statement like that in the face of the phrases, διὰ πέντε ἐτῶν, διὰ ἐννέα ἐτῶν, διὰ τρίτου ἔτους, and the like, which are of such common occurrence in Greek, for a cycle of four years, a cycle of eight years, and a cycle of two years respectively: and yet are altogether german to this of διὰ ξγ' ἡμερῶν. What difference is there between this phrase of διὰ ξγ' ἡμερῶν, to describe the cycle of the exemtile day, and that of δι' ἐννέα ἡμερῶν, to describe the cycle of the nundinal day? And if the latter means only every eight days complete, what can the former mean, but only every 62 days complete? In all such phrases, we may confidently assert, that the preposition διὰ means no such thing as Mr. Ideler supposes, but quite the reverse; not one term more than the number apparently defined by it, but one term less.

In the next place, it is another serious objection to the hypothesis in question, that it requires us to suppose a double error in the text of Geminus; one in the sum total of days, divided by 110, in order to obtain the period of the exemtile day; viz. 7050, instead of 6940, the number actually read in the text at present: the other, in the quotient of the division, which was or should have been the period of the exemtile day: 64 instead of 63. As the text of Geminus stands, his words are, "They divided 6940 by 110, which gave 63:" Mr. Ideler is obliged to correct them, and to read, "They divided 7050 by 110, which gave 64." But it is needless to add, that this correction has no authority to rest upon; nothing but the necessity of Mr. Ideler's hypothesis, which cannot be sustained without it.

In the third place, it happens, by a singular piece of good fortune, that the respective truth of these different schemes of the rule of exemtion in the cycle of Meton may even at present be put to the test by an actual case in point, supplied by Æschines contra Ctesiphontem. In that part of his speech, Æschines was bringing a certain charge against Demosthenes, implying that he had deluded the Athenians by some promise of assistance from the cities of the Peloponnese, for which there was no foundation; and the better to impose on their credulity, and to give an air of truth and consistency to his assurances, he had purposely specified a time, by which the promised assistance was to be expected: *Πραχθήσεσθαι δὲ ταῦτα οὐκ εἰς μακρὰν, ἀλλ' εἰς τὴν ἕκτην ἐπὶ δέκα τοῦ Ἀνθεστηριῶνος μηνός. εἰρῆσθαι γὰρ ἐν ταῖς πόλεσιν ὑφ' ἑαυτοῦ, καὶ παρηγγέλθαι, πάντας ἥκειν συνεδρεύσοντας Ἀθήναζε εἰς τὴν πανσέληνον*[x]. He then appeals to the decree, which Demosthenes had got passed on the same occasion[y]; after which he subjoins[z]: *Οὐκοῦν τὰς μὲν τριήρεις καὶ τὴν πεζὴν στρατιὰν καὶ τὴν πανσέληνον καὶ τοὺς συνέδρους λόγῳ ἠκούσατε, τὰς δὲ συντάξεις . . . . ἔργῳ ἀπωλέσατε.*

It is evident from these statements that the 16th of Anthesterion and the *πανσέληνον* (both mentioned) must have been only different names for the same day; consequently that, on the occasion referred to, the *πανσέληνον* must have fallen on the 16th of Anthesterion. Now what is to be understood by the *πανσέληνον*, in such references to it as these? The natural full moon, or merely the civil? Certainly not the natural. The natural full moon is never intended, in such conjunctions as these with a certain fixed term of the civil month. Besides which, in the time of Æschines and Demosthenes, when the error involved in the first principles of the Metonic cycle had accumulated to a day, the natural *πανσέληνον* was a day behind the civil date of that denomination. The true *πανσέληνον* in their time could not possibly have fallen later than the 14th of the

[x] Æschin. contra Ctes. iii. § 98 sqq. [y] § 100, 101. [z] Ib. § 102.

month; neither in the *menses cavi* nor in the *menses pleni.* It remains then to understand the πανσέληνον referred to here, of the civil or calendar full moon.

Now, according to the ordinary mode of speaking, the civil or calendar πανσέληνον was always predicated and always to be understood of the 15th of the month; and vice versa, the 15th of the month of the civil πανσέληνον. When therefore we saw the πανσέληνον in this passage of Æschines identified with the 16th of the month, it immediately occurred to us that this never would have been done had there been any fifteenth of the month; had not the 16th, in this instance, stept into the place of the fifteenth.

Allowing then the justness of this reasoning from the facts of the case, as made known by contemporaneous testimony, the reader will see at once that it necessarily leads to the following inference, viz. That, whatsoever was the actual rule of exemtion in the Metonic cycle of the time being, in certain months the fifteenth day of the month was necessarily exemtile; in certain months, and in certain years, of the cycle there could have been no fifteenth of the month; and in such cases the sixteenth stepped into its place. This however being admitted, the question between Mr. Ideler's scheme of the Exemtile day and Dodwell's is decided. The 15th is one of those days in every month which, according to Mr. Ideler, never could be exemtile. The 12th of the month might be exemtile, and the 16th also, but the 15th never could be. According to the scheme proposed supra[a], (the scheme of Dodwell,) the 15th was one of the regular exemtile days: not indeed in every year of the cycle, (for no day could be so in every year alike,) but as one of the series of such days in its turn, in the proper years and proper months of the cycle.

According then to the arrangements of Mr. Ideler, such a contingency as that which is supposed by Æschines, of the falling out of the πανσέληνον or calendar full moon on the 16th of the month, never could have happened in any year, or any month of the cycle: according to those of Dodwell, it might have happened either with the πανσέληνον of Tharge-

[a] P. 497.

lion in the *first* year, or with that of Gamelion in the *third*, or that of Pyanepsion in the *fifth*, or that of Skirrhophorion in the sixth, or that of Anthesterion in the *eighth*, or that of Mæmacterion in the *tenth*, or that of Hecatombæon in the *twelfth*, or that of Elaphebolion in the *thirteenth*, or that of Posideon in the *fifteenth*, or that of Metageitnion in the *seventeenth*, or that of Thargelion again in the *eighteenth* *.

* It is of little importance to the inference founded on this testimony, what the occasion might be to which Æschines referred, and to what year of the current cycle it must actually have belonged. Yet we are not without the means of determining that too; at least with much probability.

For it appears, from the outset of the account[1], that it must have been later than the expedition to Eubœa, rendered memorable by the battle of Tamynæ, in which Æschines himself took part: and the date of this battle is illustrated by the orations of Demosthenes, especially by that contra Midiam[2]; which shew that the affair at Tamynæ was a recent event, and the Euboïc expedition was still going on, at the Dionysia Lenæa or Anthesteria, B. C. 350. The oration contra Bœotum, De nomine[3], proves even that the date of the battle was that of the Choës, the second day of the Lenæa, Anthesterion 12.

It is self-evident then that the 16th of Anthesterion, alluded to by Æschines, could not have been the 16th of that month, B. C. 350; and the particulars recorded subsequently to the expedition, especially in reference still to Callias[4], render it morally certain that it could scarcely have been the 16th of Anthesterion, B. C. 349. But there is no reason, which we can discover, why it might not have been the 16th of Anthesterion, B. C. 348.

Now this year was the 8th of the fifth cycle of Meton, from the epoch, Hecatombæon 1, B. C. 432, the 8th year of the second Callippic period, dated from the same epoch; the ingress of which was June 30, B. C. 349. And here we have to remark *this* coincidence, that the 8th year of the cycle was the only one in which there was no *fifteenth* of Anthesterion; consequently no civil πανσέληνον bearing date on the fifteenth—none but what bore date on the sixteenth. The first of Anthesterion, cycle v. 8, was Feb. 21 at midn. B. C. 348; and the 15th being exemtile, the 16th fell on March 7 at midn. There was a lunar eclipse the same year, on March 6, 0 30 a. m. Paris: the true date of which must have been an hour or two later: but in any case, on the 14th of Anthesterion, not on the 15th or 16th; and consequently proving what we asserted supra, of the relation of the true full moon at this period of the Metonic cycle to the civil.

The same kind of illustration of the rule of exemtion in the cycle of

1 § 86–88.

2 xxi. § 21: 142, 143: 171–175: 204–207: 212. 253. cf. xxiii. 228. Contra Aristocratem. Plutarch, Demosthenes, xvii.

3 § 16, 17, (Or. xxxix.)

4 Contra Ctesiph. § 86–102.

Meton, which has thus been obtained from the contemporary testimony of Æschines, is derivable also, if we are not mistaken, from that of an Attic inscription [5].

This inscription is dated Ἐπὶ Ἀρχίππου ἄρχοντος: and according to it the people of the Piræus had let out a portion of the lands belonging to them, described as the *Παραλίαν καὶ Ἁλμυρίδα καὶ τὸ Θησεῖον, καὶ τἄλλα τεμένη ἅπαντα*, on a lease of *ten* years; conveying a discretionary power to the tenants or farmers to treat the whole, for the first nine years, in any manner which was befitting, but in the *tenth* year placing only one half at their disposal, and reserving the other half for their successors.

Οἱ *μισθωσάμενοι Παραλίαν καὶ Ἁλμυρίδα καὶ τὸ Θησεῖον καὶ τἄλλα τεμένη πάντα, ὅσα οἷόν τε καὶ θέμιτόν ἐστιν ἐργάσιμα ποιεῖν, κατὰ τάδε ἐργάσονται. τὰ μὲν ἐννέα ἔτη ὅπως ἂν βούλωνται, τῷ δὲ δεκάτῳ ἔτει τὴν ἡμισέαν ἀροῦν καὶ μὴ πλείω, ὅπως ἂν τῷ μισθωσαμένῳ μετὰ ταῦτα ἐνῇ ὑπεργάζεσθαι, ἀπὸ τῆς ἕκτης ἐπὶ δέκα τοῦ Ἀνθεστηριῶνος.*

It occurred to us here also to suspect that the 16th of Anthesterion was thus specified as the middle day of that month, instead of the 15th, in the tenth year of the lease, because there would be no 15th that year. Now the lease was granted Ἐπὶ Ἀρχίππου. The Fasti show two archons of this name, very near each other; one B. C. 321, the other B. C. 318. The name of Ἀρχίππος too occurs in Theophrastus [6], Ἐγένετο δὲ πρότερόν τε πολλάκις ἤδη, καὶ ἐπ' Ἀρχίππου δι' ἐτῶν τετταράκοντα σφοδρός. These two archons being ὁμώνυμοι, yet so near to each other, it is morally certain, if the latter had been meant in the present instance, in order to avoid the possibility of his being confounded with his predecessor, he would have been distinguished, as was usual in such cases, either by the addition of the name of his father, Ἐπὶ Ἀρχίππου τοῦ δεῖνος, or by that of the name of the archon last before him, Ἐπὶ Ἀρχίππου τοῦ μετὰ τὸν δεῖνα: and that nothing of this kind is annexed to his name, in our opinion, is an argument that of these two archons the inscription belongs to the former, not to the latter; and consequently to B. C. 321 not B. C. 318.

Now it was stipulated in the lease that the parties who had taken one part of these lands should pay half of their rent in Hecatombæon, and the other half in Posideon: *Τὴν μίσθωσιν καταθήσουσι τὴν μὲν ἡμισέαν ἐν τῷ Ἑκατομβαιῶνι, τὴν δὲ ἡμισέαν ἐν τῷ Ποσειδεῶνι*—from which we may infer the years of the lease bore date between Posideon and Hecatombæon, not between Hecatombæon and Posideon; and very probably in the month Anthesterion itself.

The first year on this principle would bear date in Anthesterion of the year of Archippus, B. C. 321–320; between Feb. 11 and March 11 B. C. 320. The tenth, at the end of which the old tenants might be required to give up possession to new ones, would be complete the same time in Anthesterion, B. C. 310. And this being the 46th year of the second period of 76 years, in the Metonic calendar, Cycle vii. 8, there would be

[5] Corpus. Inscript. Num. 103: cf. Chandler, Inscriptiones Atticæ, ii. 74. cx.

[6] Histor. Plant. iv. 14. § 11. pag. 168.

SECTION VII.—*On the probable effect of the changes required by the substitution of the Metonic Cycle for the old Octaëteric Cycle.*

The greatest novelty which the new calendar must have introduced into the reckoning of civil time at Athens was doubtless *this*, of a fresh distribution of exemtile days. In other respects there is no reason to suppose the change of style would materially affect the distinctive peculiarities of the preexisting calendar. It was one characteristic of this calendar that all its months nominally consisted of 30 days: and that was retained in the calendar of Meton. These 30 days in the old calendar were all alike divided into three periods of ten days each; and these divisions were retained also. The reckoning of the parts of these divisions was the same in each. And though only one day was *de facto* exemtile in the old octaëteric cycle, and many more were rendered so by the new rule; that would make no difference to the style of the calendar in general, or to that of each of its decads in particular. The general principle, applicable to them all alike, was *this;* that every month, and every division of the month, was nominally and externally solid, though it might in reality be hollow; i. e. want one day for its integrity: and every month, and every decad of the month, was supposed to have its proper complement of days, until the time arrived for passing over *one* in the common reckoning of *all*. Such days, as we before observed [b], were *suppressed*, not *taken out;* though the very idea of *taking them out* (even if that be assumed as implied in their name) must suppose that previously they were making part of the month.

no 15th of Anthesterion that year, and the 16th, assumed in its stead, would bear date March 8, B. C. 310.

The years of the lease were probably dated from the spring seed-time; which would always fall out in Anthesterion: the first, at that time B. C. 320, in the year of Archippus, the tenth at the same time B. C. 311. And this year it was stipulated beforehand, only one half of the land should be ploughed, and the other half should be allowed to lie fallow, in order that the new tenant, who might be expected to enter at seed-time, Anthesterion B. C. 310—might have somewhat to plough and sow the same year.

[b] Diss. i. ch. iii. sect. i. p. 50.

With regard then to the *style* of the calendar, there is no reason to suppose the Metonic correction would produce externally any difference whatsoever. In other respects, the alterations entailed by the change must very materially have affected the preexisting state of things. To say nothing of the transfer of the beginning of the year from the first of Gamelion to the first of Hecatombæon, and along with it the ingress and egress of the civil magistrate, with all the forms and ceremonies which law or custom had made characteristic of the beginning or the end of the official year, the whole scheme of the succession of Prytanies, as before adapted to the calendar of Solon, would have to be revised and recast in order to adapt it to the calendar of Meton; in which, as we have already explained[c], no adjustment of the cycle for one common year, or for one intercalary year, would serve for another, as it might have done in the calendar of Solon, but a particular adjustment would be necessary for every year, and there would practically be an ἐννεακαιδεκαετηρὶς of the cycle of Prytanies, as much as of the cycle of moons.

There can be no doubt too that the introduction of ten exemtile days, where there had been only one before, each of which must come once in its turn every 21 months, would affect a variety of dates in the Attic year, and a variety of observances, public or private, religious or civil—before connected with them. To know the full extent of the changes which it would entail in these respects, we ought to be in possession of the calendar, such as it was digested and left by Solon, or such as it had become between his time and that of Meton. The sixth of the month, even under the old calendar, was sacred to Artemis, especially the 6th of Thargelion, her reputed birthday; and this was also the feastday of Demeter Chloë, and the anniversary of the purification of Athens: yet the 6th of Thargelion would be exemtile in the *ninth* year of the cycle of Meton. What then was done in that case? were the day and the ceremonies of the day passed over for that time, as if neither of them had any existence? or was the day indeed suppressed, but the ceremonies of the day transferred to the 7th? We cannot

[c] See supra, Diss. i. ch. iii. sect. v. pag. 82.

answer this question from testimony. All we can venture to say is that, if such contingencies were contemplated and provided for beforehand, they would require very careful consideration; nothing less than a thorough revision of the old calendar, to prepare it for passing into the new, and nothing less than public authority for carrying all such changes into effect. Nor could any one say, under such circumstances, that whatsoever may be known at present of the details of the Attic calendar, subsequent to the adoption of the Metonic correction, it is any necessary criterion of the constitution of the old octaëteric calendar; except in those cases (if any there are) in which there might be reason *a priori* to conclude that the details of the calendar must have been common to both.

Section VIII.—*On the Intercalary Rule of the Cycle of Meton.*

The next thing to be considered is the Intercalary Rule of the Cycle of Meton. In the calendar of Solon, the seat of the intercalary month was the end of the year, and the intercalary month was the last month, repeated. Nor can there be any question that the natural position of the supplementary month, which every lunar and solar cycle at stated times requires, is at the end of the year[d]. It is therefore extremely probable *a priori* that, had Meton been addressing himself to the correction of the calendar by public authority, if he proposed to change the beginning of the year, he would have proposed to change the intercalary month; that is, to have a second Skirrhophorion, instead of a second Posideon. But he was not acting with the public sanction; and as it was not essential to the working of his Correction that the seat of the intercalary month should be transposed along with the beginning of the year, he was content to let the old rule remain undisturbed. This is no doubt the true explanation of the seeming anomaly, that the seat of the intercalary months in *his* cycle was the middle of its decursus. It was the necessary effect of the change in the beginning of the year, without any corresponding change in the intercalary rule.

[d] See supra, Diss. i. ch. v. sect. iv. ii. page 181.

With regard to the number of the intercalary months in his cycle, it was neither more nor less than seven; the number which entered into two cycles of the octaëteris in succession, and the first three years of a third. Præterea sunt anni magni complures, says Censorinus[c]; ut Metonicus, quem Meton Atheniensis ex annis undeviginti constituit, eoque Ἐννεακαιδεκαέτηρὶς appellatur; et interkalatur septies: in eoque anno sunt dierum sex millia et DCCCCXL. But with respect to the seats of these intercalary months in the different years of his cycle, the opinions of the learned have varied. According to Dodwell (with whom Mr. Ideler agrees) they were the 3rd, the 5th, the 8th, the 11th, the 13th, the 16th, and the 19th respectively; according to Petavius and others, they were the 3rd, the 6th, the 8th, the 11th, the 14th, the 17th, and the 19th.

In our opinion, it may justly be matter of surprise that there should ever have been any difference on this point. We have rendered it in the highest degree probable that the intercalary rule of the octaëteric cycle was purposely transferred by Meton to his own cycle, and simply repeated as often as it could come over in that; and there can be no question that the intercalary years of the old octaëteric cycle were the third, the fifth, and the eighth: on which supposition, those of the Metonic cycle (as merely the repetition of those of the octaëteric, as often and as far as that was possible in the space of nineteen years) must have been the *third*, the *fifth*, the *eighth*, the *eleventh*, the *thirteenth*, the *sixteenth*, and the *nineteenth*. The seat of the intercalary month in the old cycle (as next to Posideon at least) was certainly retained in the new: and the intercalary rule of the old cycle was both so simple in itself, and yet worked so well in practice, and answered its purpose so effectually, that it is difficult to say what end could have been gained by changing it. Geminus tells us that though Callippus corrected the first principles of the cycle of Meton, he retained its intercalary rule: and it was just as probable that Meton, while correcting the old cycle in those respects in which it stood in need of correction, would retain its intercalary rule, which admitted of no improvement.

c De Die Natali, xviii.

Testimony however is extant, from which the actual rule of his cycle in this respect may be inferred with certainty: to the consideration of which we shall proceed.

SECTION IX.—*On the extant testimony to the Intercalary Rule of the Cycle of Meton.*

i. In the first place, an inscription is in existence[f], which enumerates the order of successive Gymnasiarchs through the several months of the year; the fourth in Posideon A, and the fifth in Posideon B. The first month, it is true, is Boëdromion; and the date of the inscription is probably the time of Adrian. But, if the civil year at Athens was still lunar, and if the order of the months *inter se* was still the same as it had always been; this inscription, notwithstanding the lateness of its date, will be competent to prove that, in such years as had an intercalary month, that month was a second Posideon; and therefore the seat of the intercalary month in the cycle of Meton must always have been the middle of *his* year, *after* the sixth month, Posideon.

ii. The date of a lunar eclipse is recorded in the Magna Compositio[g], Thoth 16 at 10 h. 30 m. from noon, Nab. 367; corresponding to Dec. 12, 10. 30 p.m. B.C. 382; which, it appears[g], Hipparchus recorded, by the Attic reckoning, Ἄρχοντος Ἀθήνῃσιν Εὐάνδρου, μηνὸς Ποσειδεῶνος τοῦ προτέρου. A *former* Posideon this year implies that there was also an *after* one. Now the year itself was Cycle iii. 13 of the Metonic calendar, the 51st year of its first Callippic Period. This date therefore proves, i. That the intercalary month, in the intercalary years of the cycle, was the second Posideon, ii. That the archontic year of Evander was such a year, and consequently the 13th year was intercalary according to rule, contrary to the opinion which supposes the 14th to have been so.

iii. Another inscription is extant[h], (to which we referred before[i],) from which it may be collected that the year of Nicodorus, B.C. 314–313, was intercalary. Now this year

[f] Corpus Inscript. Græc. No. 270. Cf. Marmora Oxoniensia (liv. 1.)
[g] iv. x. Opp. i. 278.
[h] Corpus Inscript. No. 105. i. 143.
[i] Diss. i. ch. iii. sect. v. page 81.

corresponded to Per. ii. 43, Cycle vii. 5. The *fifth* year of the cycle is thus proved to have been intercalary, contrary to the opinion which supposes the *sixth* to have been so.

iv. The fiftieth oration of Demosthenes, the title of which is Πρὸς Πολυκλέα, is of much importance on this question, because it enables us to shew that neither of two years of the cycle, the 14th and the 15th, in a particular instance was intercalary: and consequently that the 13th, the year before the one, and the 16th, the year after the other, must have been so:—as they would be, according to the scheme of Dodwell.

This speech is supposed to have been delivered in the person of Apollodorus, son of Pasio; and the object of it was to recover from one Polycles the amount of the expences, incurred by Apollodorus, in serving the office of trierarch, for a certain length of time over and above the term of service to which he was liable by the laws, before he was relieved by Polycles. He was obliged therefore to give an account in it of this service; which he does, through a period of 16 or 17 months, during which he was serving partly *in* his turn, partly *out* of his turn. This account we will endeavour to follow, as concisely, yet as distinctly, as may be.

It begins with the date of the year[k]: Ἑβδόμῃ γὰρ φθίνοντος Μεταγειτνιῶνος μηνὸς ἐπὶ Μόλωνος ἄρχοντος ἐκκλησίας γενομένης .... ἐψηφίσασθε τὰς ναῦς καθέλκειν τοὺς τριηράρχους. This year answered to B. C. 362, Per. i. 71, Cycle iv. 14, Hecatombæon 1, July 23. The 24th Metageitnion fell that year on Sept. 13. The reasons of the decree are specified[l], and they appear to have been urgent, and to have required despatch. The battle of Mantinea too had only recently taken place, Skirrhophorion 12, July 4.

The legal service of Apollodorus would thus bear date not earlier than Metag. 24, Sept. 13, B. C. 362. It may be collected, in fact, from a subsequent oration[m], that it actually bore date from the ἕνῃ καὶ νέᾳ of this month itself, Sept. 19th. The different passages, referred to in the margin[n], leave no doubt of that fact; nor that the date of his term of service may be assumed Boëdromion 1, in the year of Molo, Sept.

[k] § 5. [l] § 6, 7. cf. 22. [m] li. Περὶ τοῦ στεφάνου τῆς τριηραρχίας.
[n] li. § 4. cf. l. § 8, 9. 7. 17, 18: li. § 5: l. § 43, 44, 45, 46.

20, B. C. 362; an assumption which it is necessary to bear in mind.

Now he represents it as having continued a year and five months[o] in all from this time; during which the expenses of the service, excepting two month's pay advanced by the state, (which two months were the first two, Boëdromion and Pyanepsion, B. C. 362[p],) had to be defrayed by himself. After this, we find him observing[q], *Καὶ γὰρ μισθὸν οὐδένα λαβὼν παρὰ τοῦ στρατηγοῦ ὀκτὼ μηνῶν, κατέπλευσα τοὺς πρέσβεις ἄγων, διὰ τὸ ἄριστά μοι πλεῖν τὴν ναῦν*: and immediately after[r] he speaks of being again ordered to sea, to the Hellespont, with Meno on board, who was going to supersede Autocles in the command of the fleet. All this implies that a new official year had now begun; consequently later than Hecatombæon 1, B. C. 361, July 11. The *eight* months of service *without* pay, here alluded to, are of course exclusive of the *two with* pay just before them; and both together made up a period of *ten* months, extending from the end of the *second* month, in the official year of Molo, Metageitnion 30, Sept. 19, B. C. 362, to the end of the *twelfth*, Skirrhophorion 30, July 10, B. C. 361: from which it will follow that there could have been no second Posideon *that* year, otherwise it must have been taken into account, and would have made the term of service without pay, up to the time of this return to Athens, *nine* months, instead of *eight*. On this principle, B. C. 362–361, was not an intercalary year; and yet it was the *fourteenth* of the current cycle.

The details of his service are resumed with his return to the Hellespont, B. C. 361[s]: and now it is that we find him complaining not only of having been kept unrelieved up to the end of his regular year, (which could not have lasted longer than Metag. 30, B. C. 361, Sept. 7) but also of having been obliged to serve two months longer, *extra ordinem*; *Τοῦ τε χρόνου μοι ἐξήκοντος, καὶ ἐπιτετριηραρχημένων* ἤδη μοι δυοῖν μηνοῖν, καὶ διαδόχου οὐχ ἥκοντος ἐπὶ τὴν ναῦν*[s]. These two

* Pollux, i. ix. 25. 123. p. 83. *Ἐπιτριηράρχημα δέ ἐστι χρόνος ὃν τις ἐπετριηράρχησεν, ἐξήκοντος μὲν αὐτῷ τοῦ καιροῦ, βραδύνοντος δὲ τοῦ διαδόχου.*

[o] L. § 12, 13. [p] § 11. cf. 19. [q] L. § 15. [r] § 16–18. [s] § 19–26.

months must have been Boëdromion and Pyanepsion, in his second year, Sept. 8—Nov. 5, B. C. 361*. In the course of this time a new admiral had arrived, whose name was Timomachus.

There is next an account of fresh services, on which he was ordered[t]; in the course of which allusions occur to the weather, shewing that the season was now advanced, as it would be, towards the beginning of November: *Ἔτι δὲ συνέβη τῆς νυκτὸς, ὥρᾳ ἔτους, ὕδωρ καὶ βροντὰς καὶ ἄνεμον μέγαν γενέσθαι· ὑπ' αὐτὰς γὰρ τὰς Πλειάδων δύσεις οἱ χρόνοι οὗτοι ἦσαν*[v]. The date of the *Πλειάδων δύσις*, in the Metonic calendar, was Nov. 10—B. C. 361, Mæmacterion 5. We are thus brought into the *third* month of the extra service, dated from Boëdromion 1, B. C. 361. And this is confirmed by his own words[x], from which it appears that the *two* months had now been increased to *three*: *Καὶ ἤδη τρεῖς μῆνες ἐπετετριηράρχηντό μοι, καὶ οὐδέπω οὗτος ἧκεν ἐπὶ τὴν ναῦν.* This *third* month doubtless was Mæmacterion, B. C. 361, November 6—December 5.

The arrival of Polycles at last is mentioned, while he was still at Thasus[y], yet not before he had got into the fourth month of his extra service: *Οὗτος γὰρ ἐπειδὴ ἀφίκετο εἰς Θάσον, ἤδη μου τέταρτον μῆνα ἐπιτριηραρχοῦντος, κ', τ. λ.* This fourth month would begin Posideon 1, December 6, B. C. 361, and Polycles must have arrived some time in the course of it[z].

There is then an account of a particular service on which he was ordered by the commander in chief[z], which is further explained by a subsequent allusion[a]; and when this was over,

* L. § 22–26. This extra service is supposed to have lasted 45 days from the usual time of the *ἔκπλους*, or departure of the cornships homeward, from the Pontus—*μετ' Ἀρκτοῦρον*. In the calendar of Meton, the heliacal rising of Arcturus was dated both Sept. 6 and Sept. 16. The latter was its proper date; and 45 days from Sept. 16 would extend to the end of October, and that would be two months, as nearly as possible complete, from the beginning of Apollodorus' second year, Sept. 8 Boëdromion 1.

[t] L. § 26–31.

[v] L. § 30.

[x] § 31. cf. 32–35: 23–25. 39: for a further confirmation of these conclusions, in the account of what was passing meanwhile at Athens, between Euctemon and Polycles; Euctemon having been sent home at the same time when Apollodorus was sent to the Pontus. Cf. also § 70, 71, 72–74.

[y] § 39.

[z] Cf. § 39–42.

[a] § 57–63.

of his return to Thasus. The narrative of proceedings between him and Polycles begins properly after this return; and at this point of time the *fourth* month of extra service (only just begun before) was now complete[b]: *Οὐ γάρ ἔτι μοι προσήκει τριηραρχεῖν· ὅ τε γὰρ χρόνος ἐξήκει μοι τῆς τριηραρχίας, καὶ ἐπιτετριηράρχηκα τέτταρας μῆνας.* This would be strictly the case, at the end of Posideon, Jan. 3, B. C. 360.

At this juncture too he is represented as saying to Polycles[c], *Ἐπειδὴ σὺ φῄς, ὦ Πολύκλεις, τὸν συντριήραρχον οὐχ ἥκειν*[d], *τοῦ μὲν ἐπιτετριηραρχημένου χρόνου ἐκεῖνον ἐγὼ πράξομαι τἀναλώματ' ἂν δύνωμαι, τῶν τεττάρων μηνῶν· σὺ δὲ παραλαβὼν τὴν ναῦν πρῶτον μὲν τὸν ὑπὲρ σεαυτοῦ χρόνον τριηράρχησον, τοὺς ἓξ μῆνας*[e]· *ἔπειτ' ἐὰν μέν σοι ἔλθῃ ἐν τούτῳ ὁ συντριήραρχος, ἐκείνῳ παραδώσεις λειτουργήσας· ἐὰν δὲ μὴ, οὐδὲν δεινὸν πείσῃ δύο μῆνας ἐπιτριηραρχήσας* *.

It is clearly implied in these words that, along with the *four* months of Apollodorus, already served *extra ordinem*, and the *six* months incumbent on Polycles *secundum ordinem*, and *two* months over and above incumbent either upon his colleague *secundum ordinem*, or on him *extra ordinem*, an entire year's service would be completed; which, bearing date on the first of Boëdromion, B. C. 361, would expire on the 30th of Metageitnion, B. C. 360. If so, the year contained only *twelve* months. Consequently, it was not intercalary. And yet it was the *fifteenth* of the current cycle. It is clear that there could have been no second Posideon this year; for, from the end of the fourth extra month of Apollodorus, (Posideon itself, B. C. 361–360) it is reckoned only 6 + 2, or 8 months, at the utmost, to the end of Metageitnion, next in order.

Now neither B. C. 362–361, the *fourteenth* year of the fourth cycle of Meton, nor B. C. 361–360, the *fifteenth* having

* The remainder of this history of the extra service of Apollodorus is given § 65; from which it appears he was at last ordered home by Timomachus: and by comparing § 13 at the outset of the speech, with the course and context of circumstances down to this point of time, we may infer that it must have been some time in Gamelion, Jan. 4—Feb. 2, B. C. 360. Cf. with the above generally, xlvi. 27 κατὰ Στεφάνου B. and §. 71, 72 of this oration.

[b] cf. 47. 42–51.
[c] § 50.
[d] Cf. 47, 48.
[e] Of the agreement of the trierarchs at this time to serve *six* months by turns, see § 80.

been intercalary; the year *before* the *former*, and the year *after* the *latter*, both must have been so. For if the 13th was not intercalary, and yet neither the 14th, nor the 15th, also, then there must have been three years without any intercalation; which was not possible. And in like manner, if neither the 14th nor the 15th was intercalary, nor yet the 16th, the same anomaly must have held good in that case too.

We have thus produced proofs, from actual cases, that the *fifth* year in the cycle of Meton was intercalary, according to rule, and not the *sixth*; and the *thirteenth*, not the *fourteenth*; and the *sixteenth*, not the *seventeenth*: and these are the only years of the scheme according to Dodwell, which are controverted, and opposed by the scheme according to Petavius. We may therefore conclude these explanations of the Lunar Calendar of Meton, with Geminus'[f] account of his cycle; which, after what has been premised, will appear to contain nothing but what may easily be understood.

Section X.—*Account of the Cycle of Meton, according to Geminus.*

Διόπερ ἐπειδὴ διημαρτημένην εἶναι συνέβαινε τὴν ὀκταετηρίδα κατὰ πάντα, ἑτέραν περίοδον συνεστήσαντο, τὴν τῆς ἐννεακαιδεκαετηρίδος, οἱ περὶ Εὐκτήμονα καὶ Φίλιππον καὶ Κάλιππον ἀστρο-*

* The astronomer Philippus, who is here mentioned along with Callippus, (as if they also had been the original authors of the Metonic cycle, as much as Euctemon, or Meton,) in reality was much later than Meton; as also was Callippus. Philippus appears to have been an Italian Greek, of Medme, or Medma, a settlement of the Locri Epizephyrii in Italy. Steph. Byz. Μέδμη· πόλις Ἰταλίας, . . ὅθεν ἦν Φίλιππος ὁ ἀξιόλογος ἀνὴρ, ὁ περὶ ἀνέμων γεγραφώς—Strabo, vi. 1. 8: Ἐν δὲ τῷ παράπλῳ τούτῳ Μέδαμα πόλις Λοκρῶν τῶν αὐτῶν (τῶν Ἐπιζεφυρίων) ὁμώνυμος κρήνῃ μεγάλῃ . . . . ἐγγὺς δὲ καὶ Μέταυρος ποταμός — Geographi Min. ii. 18. Skymnus of Chios, ver. 306:

Ἃς οἱ πλησίον
Ἱππώνιον καὶ Μέδμαν ᾤκισαν Λοκροί.

Cf. the Etym. Magn. in Μέσμα (Μέδμα).

Hipparchus quotes this Philippus, in his Commentary on Aratus, Lib. i. v. (Uranolog. i. 179. c.): and Plutarch refers to him, Non posse suaviter &c. xi.: Καὶ Φίλιππον, ἀποδεικνύντα περὶ τοῦ σχήματος τῆς σελήνης.

[f] Caput vi: Uranologium, 37 D—38 D.

λόγοι. παρετήρησαν γὰρ ἐν τοῖς ιθ′ ἔτεσι περιέχεσθαι ἡμέρας ,ςϡμ′. μῆνας δὲ σλε′, σὺν τοῖς ἐμβολίμοις· ἄγονται δὲ ἐν τοῖς ιθ′ ἔτεσι μῆνες ἐμβόλιμοι ἑπτά. γίνεται οὖν ὁ ἐνιαυτὸς κατ᾽ αὐτοὺς ἡμερῶν τξε′ καὶ ε′ ἐννεακαιδεκάτων. ἐν δὲ τοῖς σλε′ μησὶ κοίλους ἔταξαν ρι′ πλήρεις δὲ ρκε′, ὥστε μὴ ἄγεσθαι ἕνα καὶ ἕνα κοῖλον καὶ πλήρη, ἀλλὰ καὶ β′ ποτὲ κατὰ τὸ ἑξῆς πλήρεις. τοῦτο γὰρ ἡ φύσις ἐπὶ τῶν φαινομένων ἐπιδέχεται πρὸς τὸν τῆς σελήνης λόγον. ὅπερ ἐν τῇ ὀκταετηρίδι οὐκ ἐνῆν.

Ἐν δὲ τοῖς σλε′ μησὶ κοίλους ἔταξαν ρι′ δι᾽ αἰτίαν τοιαύτην. ἐπεὶ μῆνες ἄγονται σλε′ ἐν τοῖς ιθ′ ἔτεσιν, ὑπεστήσαντο τούτους ἅπαντας τριακονθημέρους· καὶ συνάγονται ἡμέραι ,ζν′· ἔδει δὲ λέγεσθαι ρι′ κοίλους· δι᾽ ἣν αἰτίαν ἐν τῇ ἐννεακαιδεκαετηρίδι ἡμέραι γίνονται κατὰ σελήνην ,ςϡμ′. πλεονάζουσιν οὖν τριακονθημέρων ἀγομένων πάντων τῶν μηνῶν αἱ ,ζν′ ἡμέραι τῶν ,ςϡμ′ ἡμέραις ρι′. διὸ ρι′ μῆνας συνάγουσι κοίλους, ἵνα ἐν τοῖς σλε′ μησὶ συμπληρωθῶσιν αἱ τῆς ἐννεακαιδεκαετηρίδος ἡμέραι ,ςϡμ′.

Ἵνα δὲ ὡς ἐνδέχεται μάλιστα δι᾽ ἴσου ἡ τῶν ἐξαιρεσίμων ἡμερῶν γένηται πραγματεία, ἐμέρισαν τὰς ,ςϡμ′ ἡμέρας εἰς ρι′. γίνονται οὖν ἡμέραι ξγ′. δι᾽ ἡμερῶν ἄρα ξγ′ ἐξαιρέσιμον τὴν (fort. τινὰ) ἡμέραν ἄγειν δεῖ, ἐν αὐτῇ τῇ περιόδῳ. οὐδὲ γίνεται ἐξαιρέσιμος ἡ τριακὰς διὰ παντὸς, ἀλλ᾽ ἡ διὰ τῶν ξγ′ ἡμερῶν πίπτουσα ἐξαιρέσιμος λέγεται.

Ἐν δὲ τῇ περιόδῳ ταύτῃ δοκοῦσιν οἱ μὲν μῆνες καλῶς εἰλῆφθαι, καὶ οἱ ἐμβόλιμοι συμφώνως τοῖς φαινομένοις διατετάχθαι· ὁ δὲ ἐνιαύσιος χρόνος (οὐ) συμφώνως εἴληπται τοῖς φαινομένοις. ὁ γὰρ ἐνιαύσιος χρόνος ἐκ πλειόνων ἐτῶν παρατετηρημένος συμπεφώνηκεν ὅτι ἐστὶν ἡμερῶν τξε$\frac{\alpha'}{\delta}$, ὁ δὲ ἐκ τῆς ἐννεακαιδεκαετηρίδος συναγόμενος ἐνιαυτός ἐστιν ἡμερῶν τξε′, ἐννεακαιδεκάτων ε′. πλεονάζουσι δὲ αὗται τῶν τξε$\frac{\alpha'}{\delta}$ ἡμέρας ἑβδομηκονθέκτῳ.

Δι᾽ ἣν αἰτίαν οἱ περὶ Κάλιππον γενόμενοι ἀστρολόγοι διωρθώσαντο τὸ πλεονάζον τῆς ἡμέρας, καὶ συνεστήσαντο τὴν ἑξκαιεβδομηκονταετηρίδα, συνεστηκυῖαν ἐκ τεσσάρων ἐννεακαιδεκαετηρίδων· αἵτινες περιέχουσι μῆνας μὲν ϡμ′, ὧν ἐμβόλιμοι κη′, ἡμερῶν δὲ δισμυρίων πλείους ,ζψνθ′ (27 759). τῇ δὲ τάξει τῶν ἐμβολίμων ὁμοίως ἐχρήσαντο. καὶ δοκεῖ μάλιστα πάντων ἡ αὐτὴ περίοδος τοῖς φαινομένοις συμφωνεῖν.

His Parapegma is incorporated, more or less entirely, in the compilations of Geminus, Pliny, Ptolemy, Lydus, along with those of others, of like kind, of which we gave an account in the last chapter.

Of the date of this correction of Callippus', we hope to speak by and by. Censorinus has described his period more briefly[g], but to the same effect as Geminus: Item Callippi Cyziceni (annus) ex annis lxxvi, ita ut menses duodetriginta interkalentur. And though Geminus alludes to this as the last, and in his opinion the only necessary, correction of the Metonic cycle, in reality a correction was made even of this, much better entitled to the name and estimation of the most complete and final of all; and by one, with whose writings Geminus could not have been unacquainted, since he himself has quoted them[h].

Section XI.—*On the Lunar Period of Hipparchus.*

This final correction of both these cycles, (both that of Meton, and that of Callippus,) which Hipparchus proposed, is mentioned by Ptolemy as follows[i]: *Πάλιν τὲ καὶ ἐν τῷ περὶ ἐμβολίμων μηνῶν τε καὶ ἡμερῶν, προειπὼν ὅτι κατὰ μὲν τοὺς περὶ Μέτωνα καὶ Εὐκτήμονα ὁ ἐνιαύσιος χρόνος περιέχει ἡμέρας τξε′ δ″ καὶ οϛ″ μιᾶς ἡμέρας, κατὰ δὲ Κάλιππον ἡμέρας τξε′ δ″ μόνον, ἐπιλέγει κατὰ λέξιν οὕτως· Ἡμεῖς δὲ μῆνας μὲν ὅλους εὑρίσκομεν περιεχομένους ἐν τοῖς ιθ′ ἔτεσιν ὅσους κἀκεῖνοι· τὸν δ' ἐνιαυτὸν ἔτι καὶ τοῦ δ″ ἔλασσον τριακοσιοστῷ ἐπιλαμβάνοντα μάλιστα μέρει μιᾶς ἡμέρας, ὡς ἐν τοῖς τ′ ἔτεσιν ἐλλείπειν παρὰ μὲν τὸν Μέτωνα ἡμέρας ε′, παρὰ δὲ τὸν Κάλιππον ἡμέραν μίαν.*

The 300th part of 24 hours of mean solar time is 4 h. 48 sec. On which principle, Hipparchus' solar standard must have been so much less than the mean Julian; 365 d. 5 h. 55 m. 12 sec. Yet in strictness the standard of solar time, which entered such a period as one of 304 years, or 76×4, must have been the 304th part of 24 hours less than the mean Julian. That the exact length of Hipparchus' period was 304 years, not 300, appears from Censorinus[k]: Sed et Hipparchi (est annus) ex annis ccciv, in quo interkalatur centies decies bis, i. e. 112 times, the number required in 16 Metonic cycles, 16×7. As the difference however of the $\frac{1}{300}$ part of a day, and the $\frac{1}{304}$ was small, and the former amounted to an integral part of 24 hours, the latter did not;

[g] De Die, xviii.
[h] Cap. ii. 12 E. 13 C.
[i] Magna Compositio, iii. ii. Opp. i. 163.
[k] De Die, xviii

Hipparchus probably thought proper to overlook it, and to assume his standard, as simply 4 h. 48 sec. less than the mean Julian.

It is mentioned by Pliny[l], that Hipparchus calculated and proposed a scheme of new or full moons for 600 years to come: Post eos (i. e. Thales among the Greeks, Gallus among the Romans) utriusque sideris cursum in sexcentos annos præcinuit Hipparchus, menses gentium, diesque et horas, ac situs locorum et visus populorum, complexus; ævo teste haud alio modo quam consiliorum naturæ particeps: from which account we must infer that it was digested, not only for different calendars, but for different meridians and parallels of latitude. And it appears from the Geographica of Ptolemy[m], that he was also the author of a work, in which the differences of latitude, for some of the cities of antiquity, had been given: Ἐπεὶ δὲ μόνος ὁ Ἵππαρχος ἐπ' ὀλίγων πόλεων, ὡς πρὸς τοσοῦτον πλῆθος τῶν καταταττομένων ἐν τῇ γεωγραφίᾳ, ἐξάρματα τοῦ βορείου πόλου παρέδωκεν ἡμῖν, καὶ τὰς ὑπὸ τοὺς αὐτοὺς κειμένας παραλλήλους οἰκήσεις, καὶ τὰς ἑξῆς· ἔνιοι δὲ τῶν μετ' αὐτὸν καί τινας τῶν ἀντικειμένων τόπων κ, τ. λ. So that probably the scheme of lunations, to which Pliny referred, accompanied this work; or, *vice versa*, this work was intended to accompany that.

We may presume, that if his period was really one of 304 years, this great Lunar Table of his comprehended two of those periods, 608 years, rather than 600. From what epoch it set out, unfortunately has not been specified. But it appears from Ptolemy, that Hipparchus was engaged in his observations, from Sept. 27 B. C. 162, to March 23 B. C. 128 at least[n]; and there are observations of his in the Compositio as late as May 2 and July 7 B. C. 127[n]. It is a remarkable coincidence, that this year, B. C. 128, which seems to have closed the long list of his observations on the natural tropical year, stood just at the distance of one of his periods of 304 years from the epoch of the correction of Meton, B. C. 432; when that correction already stood in need of a correction of five days, and, even if regulated from

l H. N. ii. 9. 226. m i. iv. Opp. vii. p. 14.

n Cf. our Fasti Catholici, ii. 409, 410. 413; and our Origines Kalendariæ Italicæ, iv. 165. note.

the first by a cycle like the Callippic, would have stood in need of a correction of one day. This must render it extremely probable, though not demonstratively certain, that the epoch of his Table was really this year, B. C. 128.

And though it does not distinctly appear from the above passage of Pliny, that this great Lunar Table of Hipparchus was a table of eclipses also; yet there is reason to suppose it was, or that all the eclipses at least, both solar and lunar, which were capable of occurring within the period comprehended by it, were noted in it. Cicero observes [o], Ab hominum genere finitus est dies, mensis, annus: defectiones solis et lunæ cognitæ prædictæque in omne posterum tempus, quæ, quantæ, quando futuræ sint: which strongly implies, that he was aware of some calculations in which this had been done; and if so, most probably this Table of Hipparchus. Pliny himself, in the same book of his Natural History [p], has occasion to remark, Intra ducentos annos Hipparchi sagacitate compertum est, et lunæ defectum aliquando quinto mense a priore fieri, solis vero septimo: and the date of this work having been A. D. 75–76 [q], two hundred years before that come close to B. C. 128, as the date of these discoveries of Hipparchus. Lastly, in Lydus, De Ostentis [r], there is an actual reference to a solar eclipse calculated by Hipparchus 600 years before: Ἵππαρχος δὲ ἑξακοσίοις ἔμπροσθεν ἐνιαυτοῖς ἡλιακὴν προκατέλαβεν ἔκλειψιν. There was a solar eclipse 603 years after B. C. 128, June 7, A. D. 476, at 7 P. M. for the meridian of Paris; and another 608 years after, A. D. 481, August 11, at 11 30 A. M. for the meridian of Paris: and either of these might have been observed by Lydus *.

* It is scarcely to be supposed that, if Hipparchus really calculated the solar and lunar eclipses of 600 years to come, he did not make use of the Ecliptic Cycle of 223 lunations. We gave an account of this cycle in the former part of the present work. See our Fasti Catholici, iv. 91–130: and our Origines Kalendariæ Italicæ, ii. 480–490: cf. iv. 237. sqq.

The Chaldaic Saros, which the Greeks called the Ἐξελιγμὸς, was this cycle tripled; 54 equable years 46 days perpetually: and its epoch was

o De Natura Deor. ii 61, 153.

p ii. 10. p. 232.

q Cf. our Origines Kal. Italicæ, iv. 179. and note.

r Cap. 7. Opp. 281.17.

It is this great Hipparchean Period of sixteen Metonic Cycles, 304 mean or actual Julian years, of which we have ourselves made use, in bringing down the Lunar time of our Tables from the Primary Lunar Epoch, April 29 at midnight for the meridian of Jerusalem, to the present day: of the administration of which we have given the

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August 11 B. C. 794, for the cycle of lunar eclipses, August 26 the same year, for that of solar; the former corresponding to Mecheir 6 = 5 Æra Cycl. 3213, the latter to Mecheir 21 = 20 the same year.

Now 54y. × 12 = 648y. and 46d. × 12 = 552 days = 1 year and 187 days of equable time. Hence having given the epoch of the first Chaldaic Saros,

			Lunar.		Solar.
Æra Cyclica	3213	Mecheir 5		and	20
or Æra Cyclica	3213	at	155 days	or	170 days
Add	649		187		187
and you get Æra Cyc.	3862				
= Nab.	603	at	342 days	or	357
Add one Cycle of the Ecliptic Period	18		15 8h.		15 8h.
and you get Nab.	621	at	357 8h.		372 8h.
that is —	621	Mesore	27 at 8h.		
and —	622	Thoth	7 at 8h.		

Now Nab. 621 Mesore 27 corresponded to Sept. 15, B. C. 127, and Nab. 622 Thoth 7 to Sept. 30, B. C. 127. This is sufficient to prove that B. C. 127 was the first year of one of these Ecliptic Periods, regularly deducible from the epoch, B. C. 794: and though neither Mesore 27 Nab. 621 was the date of a lunar eclipse that year, nor Thoth 7 Nab. 622 of a solar one; that was simply due to the fact that, in the course of time a given eclipse of either kind was liable to get beyond the limits of the Saros. But in that case some other lunation becomes ecliptic in its stead. And that was the case B. C. 127; when, though there was no lunar eclipse Sept. 15 Mesore 27 Nab. 621, there was one at the next full moon, Oct. 15 (1.30 a.m. Paris) Thoth 22 Nab. 622. And though there was no solar eclipse Sept. 30, B. C. 127, there was one Sept. 19, at 9 a.m. Paris, the next year, B. C. 126.

We consider it extremely probable that the first lunar eclipse, in the period of Hipparchus, was this of October 15, B. C. 127, and his first solar one, that of Sept. 19, B. C. 126. From this latter date to the date of Pliny's Natural History, A. D. 75, the interval would be 200 years; and from the same date to A. D. 475, it would be 600 years: and this year too there was a solar eclipse, June 19, at 9 a.m. which might have been that of which Lydus spoke.

necessary account in the former Parts of the present work [s]. But though this was undoubtedly the most perfect Lunar Period which was ever discovered by the Greeks; there is no proof that any Greek Lunar calendar was actually regulated by it. The Callippic Period of 76 years (the fourth part of the Hipparchean) was applied to the civil calendar in repeated instances, as we hope to see hereafter; this greater Period of Hipparchus never was so, in a single instance, so far as we ourselves have discovered. So slow is the world at large to adopt changes or corrections of the established order and course of things. the necessity of which is not apparent at the time; and which, as first proposed, seem to be abstract and speculative, not practical and useful. When Hipparchus announced his final correction of both these Periods, the error of excess already accumulated in the vulgar Metonic calendar at Athens, it might have been supposed *a priori*, must have been glaring and palpable; as it amounted to five days: yet there is no reason to suppose it was corrected by the Athenians, either at that time, or long after. The Period of Callippus indeed was still sufficiently true to the moon for all practical purposes; and it would require almost the whole of Hipparchus' two Periods of 304 years, to render it sensibly at variance with the truth of nature: and long before that time the Lunar calendar itself had been almost every where discarded, and no one was likely to be interested in applying a correction to that which was no longer in being *.

* For the Lunar calendar of Meton, digested and constructed in conformity to the principles and assumptions which we have thus explained, *in annis expansis* and *in mensibus expansis*, through one Period of four cycles, or 76 years, we refer the reader to Vol. iii. Appendix, Table vii. The type of the first Period of this kind, *mutatis mutandis*, is competent to serve for all the rest.

[s] Fasti Catholici, i. 70. 108: ii. 23: Introduction to the Tables of the Fasti, Part ii. chapter i. 79–101: Origines Kalendariæ Italicæ, Prolegomena, page xc–xciii.

CHAPTER III.

On the order of the months in the Metonic Calendar.

SECTION I.—*Testimonies.*

Metonic Calendar. Names and order of the months.

Months.	Names.	Months.	Names.	Months.	Names.
i.	Ἑκατομβαιών.	v.	Μαιμακτηριών.	ix.	Ἐλαφηβολιών.
ii.	Μεταγειτνιών.	vi.	Ποσειδεὼν Α.	x.	Μουνυχιών.
iii.	Βοηδρομιών.		Ποσειδεὼν Β.	xi.	Θαργηλιών.
iv.	Πυανεψιών.	vii.	Γαμηλιών.	xii.	Σκιρροφοριών.
		viii.	Ἀνθεστηριών.		

i. Ἑκατομβαιών: Hecatombæon: *Οὗτος γὰρ ἦν ὁ α΄ μήν* [t]—*Μὴν τῶν Ἀθηναίων ὁ πρῶτος* [v]—*Νέα νουμηνία· ἡ πρώτη ἡμέρα τοῦ ἐνιαυτοῦ. ἥτις ἐστὶ νουμηνία Ἑκατομβαιῶνος μηνός* [x]—*Εἰσιτήρια· ἀρχὴ τοῦ ἔτους ἱερὰ, ἐν ᾗ προϊᾶσιν ἄρχοντες* [y]—*Εἰσιτήρια· ἡμέρα ἑορτῆς, ἐν ᾗ οἱ ἐν τῇ ἀρχῇ πάντες προϊᾶσιν, οὕτως ἐκαλεῖτο. ταύτην δὲ τὴν ἡμέραν πρώτην τοῦ ἔτους Ἀθηναῖοι νενομίκασιν* [z].

This was the first month of the official, civil, or archontic year: *Ἐπειδὴ γὰρ οὑτοσὶ ὁ βασιλεὺς εἰσῆλθεν, ἐξὸν αὐτοῖς ἀπὸ τῆς πρώτης ἡμέρας ἀρξαμένοις τοῦ Ἑκατομβαιῶνος μηνὸς* [a] *κ᾽, τ. λ.*—*Καὶ μετὰ ταῦτα διελθόντος τοῦ ἐνιαυτοῦ τούτου, Ἑκατομβαιὼν* [b] *κ᾽, τ. λ.* The first *κυρία ἐκκλησία* of the civil year was fixed by law to the *eleventh* of this month: *Αἱρεῖσθαι δὲ...πέντε ἄνδρας...τῇ ἑνδεκάτῃ τοῦ Ἑκατομβαιῶνος μηνός* [c]—*Ἐπὶ τῆς πρώτης πρυτανείας τῇ ἑνδεκάτῃ* [d].

It followed immediately on Skirrhophorion: *Περὶ τρεῖς μῆνας, Σκιρροφοριῶνα καὶ Ἑκατομβαιῶνα* [e] *κ᾽, τ. λ.*—*Τῇ γὰρ τετράδι*

[t] Scholia in Demosthenem, In Timocrat. 707. 17: E Cod. Aug. (Reiskii.)

[v] Anecdota Græca, 247. 1.

[x] Photii Lex. p. 291.

[y] Anecdota, 187. 22.

[z] Suidas, in voce. The name of the *εἰσιτήρια* was given also to a sacrifice offered in the name of the *Βουλὴ*, or of any one senator, preliminary to his entry on the functions of that office. Cf. Demosthenes, Contra Midiam, 147. and the Schol. in loc. p. 216. (*Dobson*): *Reisk.* 552. 1.

[a] Antiphon, vi. § 44.

[b] Demosth. Olynth. iii. § 6. Cf. Gaza, De Mensibus, v. Uranolog. 284. C. D.

[c] Demosth. xxiv. Contra Timocraten, § 26.

[d] Ibid. § 23. cf. 20. 29.

[e] Aristotle, De Animal. v. 17. cf. Gaza, De Mens. iv. 283.

ἐπὶ δέκα τοῦ Σκιρροφοριῶνος κ᾽, τ. λ.—τῇ δὲ πέμπτῃ τοῦ Ἑκατομβαιῶνος κ᾽, τ. λ.—ἡμερῶν εἴκοσι διαγενομένων[f]—*Γίνεται δὲ τοῦτο περὶ τὸν Σκιρροφοριῶνα λήγοντα...πάλιν τὸ τρίτον...Ἑκατομβαιῶνος*[g]—*Τέμνουσι γὰρ δὴ νῦν τοῦ Σκιρροφοριῶνος καὶ Ἑκατομβαιῶνος*[h]. And it immediately preceded Metageitnion: *Περὶ τρεῖς μῆνας Σκιρροφοριῶνα καὶ Ἑκατομβαιῶνα καὶ Μεταγειτνιῶνα*[a]—*Διελθόντος τοῦ ἐνιαυτοῦ τούτου, Ἑκατομβαιών, Μεταγειτνιών*[b] *κ᾽, τ. λ.*

Its place in the natural year was *about* the summer solstice; sometimes a little before, sometimes after, sometimes coincident with it: *Ἂς δὲ ἡμεῖς ποιούμεθα ἀρχὰς, ἐνιαυτοῦ μὲν περὶ θερινὰς τροπὰς, ὡς Ἀθηναῖοι*[i] *κ᾽, τ. λ.*—*Θέρους δὲ περὶ τὸν Ἑκατομβαιῶνα θυννὶς (τίκτει) περὶ τροπὰς θερινὰς*[k]—*Τέμνουσι γὰρ δὴ νῦν τοῦ Σκιρροφοριῶνος καὶ Ἑκατομβαιῶνος, ὡσπερεὶ πρὸ τροπῶν μικρὸν ἢ ὑπὸ τροπάς*[l].

With regard to the seat of this month in the Julian calendar; its earliest date in the first cycle was its Julian epoch in the *third* year of the cycle, June 25, its latest, that of the *fourteenth*, July 22, its normal or proper one, that of the *first*, July 16.

ii. *Μεταγειτνιών.* Metageitnion. *Ὁ β´ μὴν παρ᾽ Ἀθηναίοις*[m]—*Δεύτερος μὴν παρ᾽ Ἀθηναίοις*[n] — *Μὴν Ἀθήνῃσι δεύτερος*[o] — *Μὴν Ἀθήνῃσι δεύτερος*[p].

It was next to Hecatombæon in the order of the official year: *Ἀπὸ τῆς πρώτης ἡμέρας ἀρξαμένοις τοῦ Ἑκατομβαιῶνος μηνὸς ... καὶ αὖθις τοῦ Μεταγειτνιῶνος μηνὸς, ἀπὸ τῆς πρώτης ἡμέρας ἀρξαμένοις*[q]—*Διελθόντος τοῦ ἐνιαυτοῦ τούτου, Ἑκατομβαιὼν, Μεταγειτνιών*[r]—*Περὶ τρεῖς μῆνας, Σκιρροφοριῶνα καὶ Ἑκατομβαιῶνα καὶ Μεταγειτνιῶνα*[s].

Its place in the natural year was later than the solstice of

[f] Plutarch, Agesilaus, xxviii.

[g] Theophrast. Hist. Plant. iii. 5. 1, 2.

[h] Ibid. iv. 11, 5. cf. Gaza, De M. iv. 288 A.

[a] Arist. De Anim. v. 17.

[b] Dem. Olynth. iii. 6.

[i] Simplicius; Schol. in Aristot. Phys. Ausc. v. 400. 23 b. cf. Gaza, v. 284 D. 285 A.

[k] Aristotle, De Animal. v. 11. 122. 3. cf. Gaza, v. 285 A: cf. Athenæus, vii. 67: Pliny, H. N. ix. 18: Gaza, iii. 280 C.

[l] Theophrastus, Histor. Plant. iv. 11, 5. cf. Gaza, iv. 283 D. E: 284 B. C. Vide Diss. i. ch. iv. sect. iii. p. 111.

[m] Harpocration in voce.

[n] Suidas in voce. Cf. Phot. Lex. in voce: also Gaza, v. 285 E.

[o] Anecdota Græca, 280. 26.

[p] Photii Lex. in voce.

[q] Antiphon, vi. 44.

[r] Demosthenes, Olynth. iii. 6. cf. Gaza, v. 284 D.

[s] Aristot. De Animal. v. 17. cf. Gaza, v. 285 D.

summer: Τοῦ χειμερινοῦ μὲν γὰρ ἀρχὴ μετὰ θερινὰς τροπὰς τοῦ Μεταγειτνιῶνος μηνός[t]. κ', τ. λ.

As to its seat in the Julian calendar; its earliest date in the first cycle was July 25, its latest, August 20; its normal or proper one, August 15[u].

iii. Βοηδρομιών. Boëdromion: Μὴν Ἀθήνησίν ἐστιν ὁ τρίτος[v]. It followed Metageitnion: Ἑκατομβαιὼν, Μεταγειτνιὼν, Βοηδρομιών· τούτου τοῦ μηνός[x] κ', τ. λ.—Τοῦ γὰρ Μεταγειτνιῶνος μηνὸς...τῇ δευτέρᾳ ἱσταμένου[y]: τῇ γ' ἕκτῃ...τοῦ Βοηδρομιῶνος[z]... ὀμόσας ... τῇ ἑνδεκάτῃ τοῦ Βοηδρομιῶνος[a] ... τῇ ὀγδόῃ φθίνοντος τοῦ Βοηδρομιῶνος μηνὸς ... τὴν δ' ἀπόφασιν τῆς οὐσίας τῇ ἕκτῃ φθίνοντος[a]...Δευτέρῳ μηνὶ τὴν ἀπόφασιν ἔδωκε μοι τῆς οὐσίας[b] —Μεταγειτνιῶνος μὲν ἡ περὶ Κρανῶνα μάχη συνέπεσε, Βοηδρομιῶνος δὲ παρῆλθεν εἰς Μουνυχίαν ἡ φρουρὰ[c], κ', τ. λ.

Its place in the natural year was ὑπ' Ἀρκτοῦρον, and the autumnal equinox; Parthenon 20, Sept. 16, in the calendar of Meton; the date of the heliacal rising in question, and also of the φθινόπωρον[d]. Ἡ δ' ὀχεία γίνεται μετ' Ἀρκτοῦρον περὶ τὸν Βοηδρομιῶνα[r] κ', τ. λ.—Τὴν δὲ τομὴν ὡραίαν ... ὑπ' Ἀρκτούρῳ Βοηδρομιῶνος μηνὸς[s] κ', τ. λ.

This month, as that in which the sea began to be shut, corresponded in the autumnal quarter to Munychion in the vernal, as that in which it was considered to be first open: Αἱ δὲ λήξεις τῶν δικῶν τοῖς ἐμπόροις ἔμμηνοί εἰσιν, ἀπὸ τοῦ Βοηδρομιῶνος μέχρι τοῦ Μουνυχιῶνος, ἵνα παραχρῆμα τῶν δικαίων τυχόντες ἀνάγωνται[t].

[t] Theophrastus, Histor. Plant. vii. 2. cf. 1: also Gaza, iii. 280 A-B: iv. 282 D.

[u] Cf. Diss. i. ch. iv. sect. iii. p. 115.

[v] Anecdota, 221. 30.

[x] Demosthenes, Olynth iii. 6. cf. Gaza, v. 284 D.

[y] Demosth. xlii. 7.

[z] Ibid. 2.

[a] Ibid. 15, 16.

[b] Ibid. 34. cf. 3.

[c] Plutarch, Demosthenes, xxviii.

[d] Cf. Theophrastus, Histor. Pl. vi 6, 9: vii. 4, 10: 10, 4: De Causis, iii. 4, 1.

[r] Aristotle, De Anim vi. 29. 191. 24. Cf. Pliny, H. N. viii 50: Gaza, v. 285 E: 286 A: ix. 295. 296.

[s] Theophrast. Histor. Plant. iv. 11, 4. Cf. Gaza, iv. 283 D: 285 E

[t] Demosthenes, xxxiii. 29: cf. vii. 12: xxxiii. 1. 33: xxxvii. 3: Lysias, xvii. 4. 8. 11. Suidas, Ἔμμηνα. κατὰ μῆνα .... καὶ ἔμμηνοι δίκαι, αἵ τε ἐμπορικαὶ καὶ ἐρανικαί: Cf. Harpocration, Ἔμμηνοι δίκαι: Anecdota, 237. 33, Δίκη ἐμπορική .... ἦσαν δὲ αὗται ἔμμηνοι, ὑπὲρ τοῦ μὴ τρίβεσθαι αὐτοὺς δικαζομένους καὶ ἀργεῖν τῆς ἀγορᾶς (corr. ἐπὶ τῆς ἀγορᾶς.) Pollux, viii vi. 63. 892, Ἐμπορικαὶ δὲ καὶ ἔμμηνοι αἱ τῶν ἐμπόρων ἢ τῶν περὶ ἐμπορίου. Hesychius, Δικάσιμοι μῆνες, οὕτως ἐλέγοντο ἐν οἷς ἐδίκαζον—Ναυτοδίκαι, οἱ ἐπὶ τοῦ ἐμπορίου δικασταὶ, ἐφ' ὧν καὶ αἱ τῆς ξενίας ἐκρίνοντο δίκαι. Cf. Suidas, Ναυτοδίκαι, and Photius, Lex. in voce, which adds, Λαγχάνειν δὲ (δίκας ἔδει) τῇ ἕνῃ καὶ νέᾳ πρὸς τοὺς ναυτοδίκας.

Its earliest Julian date in the first cycle was August 23, its latest, Sept. 19; its normal or proper one, Sept, 14[v].

v. *Πυανεψιών*. Pyanepsion. *Μὴν Ἀθήνησι τέταρτος*[x]—*Μὴν Ἀθήνησι δ′*[y]—In the order of the months it followed Boëdromion: *Μεταγειτνιῶνος μὲν ἡ περὶ Κρανῶνα μάχη συνέπεσε, Βοηδρομιῶνος δὲ παρῆλθεν εἰς Μουνυχίαν ἡ φρουρὰ, Πυανεψιῶνος δὲ Δημοσθένης ἀπέθανε*[z].

Its place in the natural year was the vintage season, or season of ingathering, for the climate of Attica[a]; consequently next after the autumnal equinox[b]. The *κόμαρος*, arbutus, or strawberry tree (*ἡ τὸ μιμαίκυλον φέρουσα τὸ ἐδώδιμον*) flowered in this month[c]: *Ἀνθεῖ δὲ τοῦ Πυανεψιῶνος*—on which Gaza[d]: *Ὁρᾶται δὲ τοῦτο γινόμενον περὶ Ἀττικὴν, καὶ τὰς ὁμοίας τὴν κρᾶσιν χώρας, δευτέρῳ μηνὶ ἀπ' ἰσημερίας φθινοπωρινῆς, τρίτῳ δ' ἀπανθεῖν καὶ τὸ μιμαίκυλον ἤδη ἀδρυνόμενον ἴσχειν*: though he himself has mistaken the order of this month in the calendar, and through that, in the natural year. The *κοκκυμηλέα* (a species of plum) flowered in Egypt in this month also, and ripened its fruit at the winter solstice: *Ἄρχεται δὲ ἀνθεῖν μηνὸς Πυανεψιῶνος, τὸν δὲ καρπὸν πεπαίνει περὶ ἡλίου τροπὰς χειμερινάς*[e]: two months after the equinox, according to Gaza[f]: *Τοῦτο δὲ περὶ δεύτερον γίνεσθαι μῆνα ἀπὸ ἰσημερίας Αἰγύπτιοι λέγουσι.*

Its earliest date in the Julian calendar was Sept. 22, its latest, Oct. 18: its normal or proper one, Oct. 13[g].

v. *Μαιμακτηριών*. Mæmacterion: *Ὁ ε′ μὴν παρ' Ἀθηναίοις*[h]—*Ὁ πέμπτος μὴν παρ' Ἀθηναίοις*[i]—*Μὴν καὶ αὐτὸς Ἀθήνησι πέμπτος*[k]—*Καὶ οὗτος μὴν Ἀθήνησιν ε′*[l].

In the natural year the site of this month was the beginning of winter[m]. The *πλειάδων δύσις*, Scorpion 15, Nov. 10, of Meton, in the rectified years of the cycle, fell out in this

v Cf. Diss. ii. ch. iv. p. 116.

x Anecdota, 297. 15.

y Photii Lex.

z Plutarch, Demosthenes, xxviii.

a Cf. Plutarch, Theseus, xxii. xxiii: Gaza, v. 287 B: viii. 290 E: supra, Diss. i. ch. iv. iii. p. 117.

b Cf. Diss. ii. part ii. ch. ii. vii. page 385. *n*.

c Theophrastus, Histor. Plant. iii. 16, 4.

d v. 287 C.

e Theophrastus, Histor. Plantar. iv. 2, 10.

f v. 287 D.

g Cf. Diss. i. ch. iv. iii. 107.

h Harpocration in voce.

i Suidas in voce.

k Anecdota, 280. 27.

l Photii Lex. in voce.

m Cf. Diss. i. ch. iv. iii. page 121.

month. Μὴν μὲν ἦν Μαιμακτηριών [n]: on which the scholiast [o]: *Κατ' ἔμφασιν μείζονα τῆς σπουδῆς κεῖται τὸ ὄνομα τοῦ μηνός· θέλει γὰρ εἰπεῖν ὅτι καὶ χειμῶνος ὄντος τὰς ναῦς καθέλκειν ἐψηφίσασθε. καὶ γὰρ χειμερινὸς ἦν ὁ μήν.*

In the order of the calendar, it preceded Posideon, and therefore followed Pyanepsion. Agatharchides of Cnidus, speaking of the appearance of Ursa Major in the Red Sea; Ἀπὸ γὰρ Μαιμακτηριῶνος, ὃς ἄγεται παρὰ τοῖς Ἀθηναίοις, οὐδεὶς ἀστὴρ τῶν ἑπτὰ φαίνεται μέχρι φυλακῆς πρώτης· ἐν δὲ Ποσειδεῶνι μέχρι δευτέρας· ἐν δὲ τοῖς ἑξῆς τῶν μηνῶν κατὰ λόγον [p]: a statement repeated after him by Diodorus [q].

A certain fact is related by Aristotle of the natural history of the camel, and dated apparently in this month [r]; which at first sight would seem to imply that it followed Boëdromion and preceded Pyanepsion. We may have occasion to consider this statement, in connection with a different subject, at a future stage of this work; and it may then be shewn that to render him consistent with himself some correction of his text is necessary. Speaking of the habits of the deer too, he observes [s]: Ἡ δ' *ὀχεία γίνεται μετ' ἀρκτοῦρον, περὶ τὸν Βοηδρομιῶνα καὶ* Μαιμακτηριῶνα: from which Gaza drew the inference that Mæmacterion followed Boëdromion, without the interposition of any other month [t]. But that would be no necessary inference, if the rutting season lasted more than one month; from some time in Boëdromion to sometime in Mæmacterion. Pliny, in reference to the same natural fact, observes simply [v]: Conceptus earum post Arcturi sidus: Pollux [x], Ἡ *ἔλαφος κύει ... μῆνας εἰς ὀκτώ· τίκτει δὲ προσπληρωθεῖσα (προπληρωθεῖσα) ὑπὸ τὸ μετόπωρον ἱστάμενον*: the end of Boëdromion. In like manner, speaking of the migration of birds and fishes, Aristotle observes [y]; Ποιεῖται δ' ἀεὶ τὰ *ἀσθενέστερα πρῶτα τὴν μετάστασιν καθ' ἑκατέραν τὴν ὑπερβολήν,*

[n] Demosthenes, Olynth. iii. 5.

[o] 29. 13. (Reiske) e cod. Aug.

[p] Geographi Min. i. 66: Photius, Bibliotheca, Cod. 250, 459. l. 16: cf. Vita Apollonii, iii. xv. 155 A. B. Solinus, lii. 13: Septemtriones in eo tractu in anno semel, nec ultra quindecim dies, apparent, sicut auctor est Beton, qui perhibet hoc in pluribus Indiæ locis evenire. Cf. liii. 6, 7.

[q] Diodorus Sic. iii. 48.

[r] De Anim. v. 14. 127. 28.

[s] Ibid. vi. 29, 191. 24.

[t] De Mensibus, v. 285 L: 286 A–C: ix. 296 B.

[v] H. N. viii. 50. Cf. Solinus, xix. 9, 10.

[x] v. xii. 2. 77. 518.

[y] De Anim. viii. 12. 230. 1.

οἷον οἱ μὲν σκόμβροι τῶν θύννων, οἱ δ' ὄρτυγες τῶν γεράνων. τὰ μὲν γὰρ μεταβάλλει τοῦ Βοηδρομιῶνος. τὰ δὲ τοῦ Μαιμακτηριῶνος. And though Gaza draws the same inference as before from this statement also [z], neither does it follow from this any more than from the former; if, as we apprehend to have been the case, all that Aristotle intended to say was, that one description of birds or fishes staid a month longer than another *.

The earliest date of this month in the Julian calendar was October 21; the latest, November 17; the normal or proper one, November 12 [a].

vi. *Ποσειδεὼν* A. Posideon Primus: *Ὁ ϛ' μὴν παρ' Ἀθηναίοις οὕτω καλεῖται* [b]—*Ἕκτος μὴν παρὰ Ἀθηναίοις οὕτω καλούμενος* [c]—*Μὴν Ἀθήνῃσιν ἕκτος* [d]—*Ἕκτος μὴν παρὰ Ἀθηναίοις οὕτω καλούμενος* [e].

The site of this month in the natural year was at or about the winter solstice: *Ἔστι δ' ὁ μὲν πρῶτος τόκος περὶ τὸν Ποσειδεῶνα πρὸ τροπῶν, ὁ δ' ὕστερος τοῦ ἔαρος* [f]—*Καὶ Ἀττικοὶ τὸν περὶ χειμερίους τροπὰς μῆνα Ποσειδεῶνα καλοῦσι* [g]. Cf. on this point the testimonies collected supra [h]. The *Εὐώνυμον*, or spindle-tree, a native of Lesbus, began to sprout in this month; flowering however only in the spring: *Ἡ δὲ βλάστησις ἄρχεται μὲν αὐτῆς περὶ τὸν Ποσειδεῶνα, ἀνθεῖ δὲ τοῦ ἦρος* [i].

Posideon and Gamelion are reckoned by Aristotle two of the winter months in sequence: *Ἔξω δύο μηνῶν, τῶν ἐν τῷ*

* It is observable that in the Scholia on Aristophanes, ad Aves 1047, Mæmacterion is called the judicial month, instead of Munychion: *Τότε γίνεται τὸ περὶ ὕβρεων δικαστήριον. ὡς ἐν τούτῳ* (sc. *τῷ Μουνυχιῶνι*) *τῶν ἐναγομένων ξένων ἀπὸ τῶν πόλεων καλουμένων. οὐκ ἦν δὲ, ἀλλ' ὁ Μαιμακτηριών, ὡς Φιλέταιρος ἐν Μησὶ δηλοῖ·*

Τίς ἐστι Μαιμακτηριών; μὴν δικάσιμος—

Ἔδει εἰπεῖν Μαιμακτηριῶνα. εἰς τοῦτον γὰρ ἦσαν αἱ κρίσεις. But the truth is, every month was *δικάσιμος* in this sense, from Boëdromion to Munychion. See supra, iii. *Βοηδρομιών*.

z v. 286 A–B.

a Diss. i. ch. iv. iii. p. 121.

b Harpocration in voce.

c Suidas in voce. In Kuster's edition, *Δεκέμβριος* follows, implying that Posideon and December were the same.

d Anecdota, 297. 16.

e Photii Lex. in voce.

f Aristotle, De Anim. v. 9. 121. 3.

g Schol. ad Il. O. 188.

h Diss. i. ch. iv. iii. p. 125.

i Theophrastus, Histor. Plant. iii. 18, 13.

χειμῶνι τροπικῶν[k]; i. e. Posideon and Gamelion, one before, the other after, the solstice. Speaking of the gestation of the bear, which he puts at *thirty* days, he has the following statement[l]: Τὴν δ' ὀχείαν ποιεῖται τοῦ μηνὸς τοῦ Ἐλαφηβολιῶνος· τίκτει δὲ περὶ τὴν ὥραν τὴν τοῦ φωλεύειν ... ὅταν δ' ἐκθρέψῃ τρίτῳ μηνὶ ἐκφαίνουσιν ἤδη τοῦ ἔαρος[m]. In a subsequent passage[n] the ὥρα τοῦ ἐξάγειν τοὺς σκύμνους is dated, as before, τοῦ ἔαρος, but περὶ τρίτον μῆνα ἀπὸ τροπῶν· and the shortest period, τοῦ φωλεῖν, is put at *forty* days. Τὸ δ' ἐλάχιστον φωλεῖ περὶ τετταράκονθ' ἡμέρας. Laying these passages together, we see that some correction of the first of them is necessary to reconcile it to the second; and that if Ποσειδεῶνος is not to be substituted for Ἐλαφηβολιῶνος—yet, if Elaphebolion was the month in which the bear was supposed to lead out her cubs, Mæmacterion must have been that in which it must have been supposed they were conceived, and Posideon that in which they were born. And this may authorize the conjecture that Aristotle really wrote, Τὴν δ' ὀχείαν ποιεῖται τοῦ τετάρτου μηνὸς πρὸ τοῦ Ἐλαφηβολιῶνος, τίκτει δὲ περὶ τὴν ὥραν τὴν τοῦ φωλεύειν; i. e. in Posideon; and the rest as it stands in the text*.

In this month too, for a reason peculiar to it, the water of the Clepsydra, or hour-glass, was wont to be measured expressly, in proportion to the time for which it was intended and expected to run. Ἐν τῷ Ποσειδεῶνι μηνὶ διαμεμετρημένη ἡμέρα ἐλέγετο. ἡ δὲ ἦν μέτρον τι ὕδατος, πρὸς μεμετρημένον ἡμέρας διάστημα ῥέον. ἐμετρεῖτο δὲ τῷ Ποσειδεῶνι μηνί. ἐν τούτῳ γὰρ (τῷ ὕδατι sc., not τῷ μηνὶ †) ἠγωνίζοντο οἱ μέγιστοι καὶ περὶ τῶν

* Pliny, H. N. viii. 54: speaking also of the bear, observes (no doubt after Aristotle), Eorum coïtus hiemis initio ... dein secessus in specus, separatim, in quibus pariunt trigesimo die... ideo mares quadragenis diebus latent, feminæ quaternis mensibus ... procedunt vere, sed mares præpingues. Cf. Solinus, xxvi. 4–6: Ælian, in like manner, Hist. Anim. vi. 3, tells us the bear brought forth τοῦ χειμῶνος, but did not lead out her cubs, πρὶν ἢ πληρωθῆναι τρεῖς μῆνας, or, as he also expresses it, τὴν ἐπιδημίαν τοῦ ἦρος προσμένουσα. Cf. Oppian, Kynegetica, iii. 170 sqq.: Halieutica, ii. 247.

† Scholia ad Acharnenses, 693. Κλεψύδραν· Ἀντὶ τοῦ ἐν τῷ δικαστηρίῳ·

[k] De Animalibus, vi. 1. Cf. v. 13. 123. 23. (Pliny, H. N. x. 74. 154): Gaza, ix. 294 B.

[l] De Anim. vi. 30. 193. 6. cf. 1.

[m] Cf. Gaza, iii. 281 D: 282 A.

[n] viii. 17. 236. 14.

μεγίστων ἀγῶνες[o]: which was taken in part from Harpocration[p]: Μέτρον τί ἐστιν ὕδατος πρὸς μεμετρημένον ἡμέρας διάστημα ῥέον. ἐμετρεῖτο δὲ ἐν τῷ Ποσειδεῶνι μηνί· πρὸς δὴ τοῦτο ἠγωνίζοντο οἱ μέγιστοι...ἀγῶνες[q]. The reason of this custom at first sight does not appear. Perhaps some light is thrown upon it by the following passage of Athenæus, on the liability of water to be contracted, as he supposed, by cold[r]: Συστέλλει δὲ αὐτὸ καὶ πυκνοῖ μᾶλλον τὸ ψῦχος· διὸ καὶ ἐν τοῖς γνώμοσι ῥέον οὐκ ἀναδίδωσι τὰς ὥρας ἐν τῷ χειμῶνι, ἀλλὰ περιττεύει, βραδυτέρας οὔσης τῆς ἐκροῆς, διὰ τὸ πάχος. καὶ ταῦτα περὶ Αἰγύπτου φησὶν, ὅπου μαλακώτερος ὁ ἀήρ. If so, and the time allowed for running out was not to be enlarged, the quantity of the water must be diminished. We are not told that the same thing was done in any other month; and therefore this custom, peculiar to Posideon, is an argument that it was the coldest month in the year, or one of the coldest. That this month followed Mæmacterion, appears from the passage of Agatharchides, quoted supra.

The earliest Julian date of Posideon A was November 20—its date in the *third* year of the first cycle; the latest, December 16, its date in the fourteenth: its normal or proper one, Dec. 11—in the first year[s].

vi. Bis: Ποσειδεὼν B. Posideon Secundus. The intercalary month in the calendar of Meton, as it had been in that of Solon. Its place was consequently next to that of Posideon, which in such years assumed the epithet of Πρῶτος or *Primus*, as this did that of Δεύτερος or Secundus. No date indeed, so far as we know, is actually on record, in terms of this

ἡ γὰρ κλεψύδρα ἀγγεῖόν ἐστιν ἔχον μικροτάτην ὀπὴν, περὶ τὸν πυθμένα, ὅπερ ἐν τῷ δικαστηρίῳ μεστὸν ὕδατος ἐτίθετο, πρὸς ὃ ἔλεγον οἱ ῥήτορες. Cf. ad Vespas, 93: Photii Lex. Κλεψύδρα: Suidas, Κλεψύδρα. There was a proper person, who regulated this vessel, called ἐφύδωρ: Pollux, viii. 9. 32. Ἐπιμελητὴς δέ τις κληρωτὸς ἐγίγνετο, ὃς ἐκαλεῖτο ἐφύδωρ, ὁ παραφυλάττων τὴν ἰσότητα τῆς κλεψύδρας. Suidas, Ἐφ' ὕδωρ· ἐν ταῖς πρὸς ὕδωρ δίκαις ἐλάγχανεν, ὁ ἐπιμελησόμενος τούτου. cf. in Εἶτ' ἐφ' ὕδωρ κακός—from which it appears it was a mean office. cf. Hesychius, in Ἐφ' ὕδωρ.

[o] Suidas, Ποσειδεῶνος. Cf. in Διαμεμετρημένη ἡμέρα. Hesychius, Διαμεμετρημένην ἡμέραν.

[p] Διαμεμετρημένη ἡμέρα.

[q] Cf. Schol. in Demosth. 138. De Falsa Leg. 252. Καινούς.

[r] ii. 16.

[s] Diss. i. ch. iv. iii. 123.

month—though allusions to it occur, which we produced supra[t].

Its earliest Julian date was that of the first intercalation, in the third year of the cycle, Dec. 19; the latest that of the fifth, Dec. 27, in the 13th year of the cycle: the normal or proper one was that of the *seventh*, in the 19th year of the cycle, December 21.

vii. *Γαμηλιών*: Gamelion: Μὴν Ἀθηναίων ἕβδομος[v]. The site of this month in the natural year was next to the winter solstice; that is, *after*, not *before*, it. It was reckoned by Aristotle, as we have seen[x], along with Posideon, one of the two months which preceded and followed the winter tropic respectively. The appearance of a comet, mentioned by him, was dated *Γαμηλιῶνος, περὶ τροπὰς ὄντος τοῦ ἡλίου χειμερινάς*[y]. It appears too, supra[z], that he must have reckoned Gamelion the first month, after the tropic, as he did Elaphebolion the third. It is recognised as a winter month by Lysias also[a]; especially when compared with Demosthenes[b].

Theophrastus[c], speaking of *τρεῖς ἄροτοι* (three crops) *πάντων τῶν κηπευομένων*, (i. e. all kinds of garden or pot herbs, *τὰ λάχανα*.) describes one of them *(εἷς μὲν)* as *ὁ χειμερινὸς, ἄλλος δὲ ὁ θερινὸς, τρίτος δὲ ὁ μεταξὺ τούτων, μεθ' ἡλίου τροπὰς χειμερινάς*. He adds that these were thus distinguished, because they were expected to ripen and be ready at each of these seasons respectively; *Καλοῦσι δ' οὕτως, οὐ πρὸς τὴν σπορὰν βλέποντες ἀλλὰ πρὸς τὴν γένεσιν καὶ τὴν χρείαν ἑκάστου*. Of these, the *ἀρχὴ τοῦ χειμερινοῦ* (that which was to come in in winter) was dated in Metageitnion, *μετὰ τροπὰς θερινὰς*, and that of the second (which was expected to ripen in the spring) at the opposite season of the year, *μεθ' ἡλίου τροπὰς (χειμερινὰς) τοῦ Γαμηλιῶνος μηνός*: so that Gamelion, on this principle, relatively to the winter solstice, corresponded to Metageitnion relatively to the summer solstice.

The earliest Julian date of this month was December 30; the latest, January 26: its mean or normal date was January 10.

[t] Diss. iii. cap. ii. ix. page 511: cf. Corp. Inscr. Græc. No. 270.
[v] Anecdota, 228. 26.
[x] Page 528.
[y] Meteorologica, i. 6. 12, 3.
[z] Page 529, and note: cf. Gaza, ix. 294 B.
[a] xvii. 8.
[b] xxiii. 29.
[c] Histor. Plant. vii. i, 1. 2.

viii. Ἀνθεστηριών: Anthesterion: Ὄγδοος μὴν οὗτος παρ' Ἀθηναίοις[e]—Ὄγδοος μήν ἐστι παρ' Ἀθηναίοις[f]—Ὄγδοος μήν ἐστι παρὰ Ἀθηναίοις[g]. It was the first of the spring months for the climate of Attica; and that in which the flowers and leaves first appeared[h]. In the order of the months, it immediately preceded Elaphebolion: Κατὰ δὲ τὸν Ἀνθεστηριῶνα καὶ Ἐλαφηβολιῶνα, λέγουσιν οἱ ἐπιχώριοι διότι πέμπει ἡ Βόλβη[i] κ', τ. λ.—Πρότερον μὲν οὖν φασι τοὺς κατὰ τὴν Ἀπολλωνίαν Ἐλαφηβολιῶνος τὰ νόμιμα συντελεῖν τοῖς τελευτήσασι, νῦν δὲ Ἀνθεστηριῶνος[i]. And it immediately followed Gamelion: Τὰς σπονδὰς εἶναι ἀπὸ τοῦ Γαμηλιῶνος μηνὸς, ἀπὸ ἀρχομηνίας, καὶ τὸν Ἀνθεστηριῶνα, καὶ τοῦ Ἐλαφηβολιῶνος[k] κ', τ. λ.

The earliest Julian date of this month was January 28; the latest, February 24; the mean or normal, February 8[l].

ix. Ἐλαφηβολιών: Elaphebolion: Μὴν Ἀθήνησι πέμπτος (corrige, ἔνατος[m]). It was reckoned by Aristotle, as we saw[n], the third month from the solstice of winter; and it is ascertained to have been a spring month by the testimony of Thucydides[o]. It followed Anthesterion, as the quotations (No. viii.) shew; and it preceded Munychion: Ὁ δὲ Κερσοβλέπτης πόσαις πρότερον ἡμέραις ἀπώλεστε τὴν ἀρχὴν πρὶν ἐμὲ ἀπιέναι; ὥς φησι Χάρης ὁ στρατηγὸς, καὶ ἡ ἐπιστολὴ, τοῦ προτέρου μηνὸς, εἴπερ Ἐλαφηβολιών ἐστι Μουνυχιῶνος πρότερος[p].

The earliest Julian date of this month was February 27; the latest, March 26: the mean or normal one, March 10[q].

x. Μουνυχιών: Munychion: Ὁ ι' μὴν παρ' Ἀθηναίοις οὕτω καλεῖται[r]—Ὁ δέκατος μὴν παρ' Ἀθηναίοις[s]—Καὶ οὗτος μὴν Ἀθήνησι δέκατος[t]. The third of the crops of garden herbs, that which ripened in the summer, and was called ὁ θερινὸς, was sown in this month: Τοῦ τρίτου δὲ, ὃν καλοῦσι θερινὸν, τοῦ Μουνυχιῶνος[v]. It followed Elaphebolion[p]; and *a fortiori* Anthesterion[x]: and it preceded Thargelion: Τίκτουσι δ' οἱ πλεῖστοι

[e] Harpocration, in voce.
[f] Suidas, in voce.
[g] Anecdota, 405. 32.
[h] Cf. Diss. i. ch. iv. iii. p. 97.
[i] Athenæus, viii. 11.
[k] Corpus Inscr. Græc. No. 71. cf. supra, Diss. i. ch. ii. vii. p. 43.
[l] Cf. Diss. i. ch. iv. iii. 96.
[m] Anecdota, 249. 7.
[n] Supra, page 529.
[o] v. 19. compared with 20. cf. Diss. i. ch. v. ii. page 136.
[p] Æschines, ii. 98. cf. Gaza, iii. 282 B–C.
[q] Cf. Diss. i. ch. iv. iii. 101.
[r] Harpocration, in voce.
[s] Suidas, in voce.
[t] Photii Lex. in voce.
[v] Theophrastus, Hist. Plant. vii. 1, 2.
[x] Cf. Plutarch, Demetrius, xxvi.

τῶν ἰχθύων ἐν μησὶ τρισὶ, Μουνυχιῶνι Θαργηλιῶνι Σκιρροφοριῶνι[y]. It answered to Boëdromion, at the opposite quarter of the year, as the first of the months after which the sea was open, in contradistinction to the first, after which it was shut[z]: Τῷ γὰρ Μουνυχιῶνι μηνὶ τοῦ ἔαρος δικάζονται αἱ πρὸς τοὺς ξένους δίκαι[a].

The earliest Julian date of this month was March 28; the latest, April 24; the mean or normal, April 8[b].

xi. Θαργηλιών: Thargelion: Μὴν Ἀθήνησιν ἑνδέκατος[c]—Μὴν Ἀθήνησιν ια´[d]—Θαργηλιὼν (δὲ) ὁ ἑνδέκατος μὴν ὀνομάζεται[e]. The site of this month in the natural year, as the first of the summer months for the climate of Attica, was intimated by its name itself[f]. The barley-harvest was commonly ripe in this month[g]. The ἀρχὴ θέρους, dated with the heliacal rising of the Pleiads (May 6 in the calendar of Meton), fell out in this month[h]. Hence ἄκρου ἔαρος, *vere supremo*, or *præcipite*, and εὐθὺς ἱσταμένου τοῦ Θαργηλιῶνος, in Theophrastus meant the same thing[i].

It was the last month, but one, of the official year: Τῆς δ' ἀρχῆς αὐτῷ (τῷ βασιλεῖ) λοιποὶ δύο μῆνες ἦσαν Θαργηλιὼν καὶ Σκιρροφοριών[k]—Munychion Thargelion Skirrhophorion were consecutive months: Τίκτουσι δ' οἱ πλεῖστοι τῶν ἰχθύων ἐν μησὶ τρισὶ, Μουνυχιῶνι Θαργηλιῶνι Σκιρροφοριῶνι[l]—Ἄρχονται δὲ τῆς ὀχείας (αἱ βόες) περὶ τὸν Θαργηλιῶνα μῆνα καὶ τὸν Σκιρροφοριῶνα αἱ πλεῖσται[m]—Θαργηλιῶνος μηνὸς δευτέρᾳ φθίνοντος . . . ἔγραψε ψήφισμα Δημοσθένης ἀγορὰν ποιῆσαι τῶν φυλῶν Σκιροφοριῶνος δευτέρᾳ ἱσταμένου καὶ τρίτῃ[n]—Φυλάξας τὴν τελευταίαν ἡμέραν τῶν διαιτητῶν τὴν τοῦ Θαργηλιῶνος ἢ τοῦ Σκιροφοριῶνος γιγνομένην[o]—Περὶ γὰρ τὴν βλάστησιν ἐλάτης καὶ πεύκης, ὅτε καὶ λοπῶσι, τοῦ Θαργηλιῶνος ἢ Σκιρροφοριῶνος ἄν τις περιέλῃ (the bark) παραχρῆμα ἀπόλλυται[p]—Πᾶν γὰρ δὴ δένδρον ὅταν βλα-

[y] Aristotle, De Anim. v. 11. 121. 30. cf. Pliny, H. N. ix. 74. 807: Gaza, iv. 282 D–E: viii. 290 B.

[z] Cf. supra, page 525. note: and Demosthenes, xlix. 7–31: Gaza, iv. 283 A–B.

[a] Scholia ad Aves, 1478.

[b] Cf. Diss. i. ch. iv. iii. 103.

[c] Anecdota, 263. 27.

[d] Photii Lex.

[e] Etymologicum M. Θαργήλια.

[f] Cf. Diss. i. ch. iv. iii. p. 105.

[g] Diss. i. ch. v. ii. p. 146.

[h] Cf. Diss. ii. P. i. ch. i. viii. p. 291 *n*.

[i] Histor. Plant. iii. 5, 1.

[k] Antiphon, vi. 42.

[l] Aristotle, De Anim. v. 11. 121. 30. cf. Pliny, H. N. ix. 74. 807.

[m] Ibid. vi. 21. 185. 28.

[n] Æschines, iii. 27.

[o] Demosthenes, xxi. 111.

[p] Theophrastus, Histor. Plant. iv. 15, 3.

στάνῃ λοπᾷ, πρῶτον μὲν ἄκρου ἔαρος, εὐθὺς ἱσταμένου τοῦ Θαργηλιῶνος· ἐν δὲ τῇ Ἴδῃ περὶ πεντεκαίδεκα μάλιστα ἡμέρας. μετὰ δὲ ταῦτα διαλιπόντα περὶ τριάκοντα ἢ μικρῷ πλείους, ἐπιβάλλεται πάλιν ἄλλους βλαστοὺς . . . γίνεται δὲ τοῦτο περὶ τὸν Σκιρροφοριῶνα λήγοντα . . . διαλείποντα δὲ μετὰ τοῦτο περὶ πεντεκαίδεκα ἡμέρας, πάλιν τὸ τρίτον ἐπιβάλλεται βλαστοὺς Ἑκατομβαιῶνος, ἐλαχίστας ἡμέρας τῶν προτέρων, ἴσως γὰρ ἓξ ἢ ἑπτὰ τῶν πλείστων [q].

The earliest Julian date of this month was April 27; the latest May 24; the mean or normal May 8.

xii. Σκιρροφοριών: Skirrhophorion: *Μὴν Ἀθηναίων δώδεκατος* [s]—*Μὴν Ἀθηναίων δωδέκατος* [t]—*Μὴν Ἀθήνησιν ιβʹ* [v]—What Plato, De Legibus [x], called the month of Pluto, and the twelfth month, the Scholiast in loc. [y] called Skirrhophorion; *Ὁ Σκιροφοριὼν οὗτος.*

The site of this month in the natural year was *πρὸ τροπῶν μικρὸν ἢ ὑπὸ τροπάς* [z]; that is, the summer solstice. Speaking of the proper time for cutting the *calamus auleticus*, Theophrastus observes: *Τὴν δὲ τομὴν ὡραίαν εἶναι πρὸ Ἀντιγενίδου μὲν* (B. C. 407) *ἡνίκ' ηὔλουν ἀπλάστως ὑπ' Ἀρκτούρῳ Βοηδρομιῶνος μηνός. ἐπεὶ δὲ εἰς τὴν πλάσιν μετέβησαν ἡ τομὴ μετεκινήθη· τέμνουσι γὰρ δὴ νῦν τοῦ Σκιρροφοριῶνος καὶ Ἑκατομβαιῶνος, ὡσπερεὶ πρὸ τροπῶν μικρὸν ἢ ὑπὸ τροπαῖς* [a].

It was the last month in the official or archontic year: *Λοιποὶ δύο μῆνες ἦσαν Θαργηλιὼν καὶ Σκιρροφοριών* [b]. It followed Thargelion, and preceded Hecatombæon [c]—*Περὶ τρεῖς μῆνας Σκιρροφοριῶνα καὶ Ἑκατομβαιῶνα καὶ Μεταγειτνιῶνα* [d]—*Ἦν μὲν γὰρ Σκιροφοριὼν* [e] *κʹ, τ. λ.*—*Τῇ γὰρ τετράδι ἐπὶ δέκα τοῦ Σκιροφοριῶνος μηνὸς ἐποιήσαντο τὰς σπονδὰς ἐν Λακεδαίμονι, τῇ δὲ πέμπτῃ τοῦ Ἑκατομβαιῶνος ἡττήθησαν ἐν Λεύκτροις, ἡμερῶν εἴκοσι διαγενομένων* [f]. The last day of this month was consequently the last day of the year, in which capacity it had the name of *Ἐξιτηρία*. Hesychius, *Ἐξιτηρία· ἡμέρα ἐν ᾗ τὰς ἀρχὰς*

q Ibid. iii, 5, 1. 2. cf. Gaza, iv. 283 B–C: viii. 290 E: ix. 293 E: Pliny, H. N. xvi. 41. 363.

s Suidas, in voce.

t Anecdota, 304. 22.

v Photii Lex.

x Pars iii. tom. iii. 75. 13.

y ii. 453. De Leg. viii. 75. 13.

z Theophrastus, Histor. Plant. iv. 11, 5. cf. Pliny, H. N. xvi. 66. 427: Gaza, iv. 283 D. 284 B. v. 285 E.

a Ibid.

b Antiphon, vi. 42.

c Vide Aristotle, de Animalibus, v. 11. 121. 30: vi. 21. 185. 28: Æschines, iii. 27: Demosthenes, xxi. 111: Theophrastus, Histor. Plant. iv. 15, 5. iii. 5, 1. supra 533.

d Aristotle, De Animalibus, v. 17.

e Demosthenes, xxiv. 18. cf. 17. 134. 182. 29–32.

f Plutarch, Agesilaus, xxviii.

ἀπετίθεντο Ἀθήνησι. Also that of Παστείλη: Παστείλη· σημαίνει τὴν τελευταίαν ἡμέραν τοῦ ἐνιαυτοῦ...ἐν ᾗ τελειοῦται πάντα τὰ τοῦ ἐνιαυτοῦ [g]—Παστείλη· ἡ τελευταία ἡμέρα τοῦ ἐνιαυτοῦ [h]—Παστείλη· ἡ ἐσχάτη ἡμέρα τοῦ ἐνιαυτοῦ [i]. And there was a stated sacrifice to Jupiter Σωτὴρ, the concluding ceremony of the year, on that day [k].

The earliest Julian date of this month was May 27; the latest, June 22; the mean or normal one, June 6 [l] *.

SECTION II.—*On the scheme of the Attic months according to Gaza.*

The order and succession of the months in the Attic calendar (that is, the Metonic) which Theodore Gaza collected from the same kind of testimonies in general, as that which we have just laid before the reader, was the following [m]:—

i. Hecatombæon.	vii. Posideon.
ii. Metageitnion.	viii. Gamelion.
iii. Boëdromion.	ix. Elaphebolion.
iv. Mæmacterion.	x. Munychion.
v. Pyanepsion.	xi. Thargelion.
vi. Anthesterion.	xii. Skirrhophorion.

The error, involved in these arrangements, affected first of all, the ivth, the vth, and the vith months, Mæmacterion,

* By the Scholia on the Pax of Aristophanes, ad v. 418. (cf. also ad 419.) the fourteenth of this month is assigned as the date of the Διπόλεια· Διπόλεια δὲ ἑορτὴ Ἀθήνησιν ἐν ᾗ Πολιεῖ Διῒ θύουσι Σκιρροφοριῶνος τετάρτῃ ἐπὶ δέκα· ἔστι δὲ ἀπομίμημα τῶν περὶ τῶν πελάνων (τὸν πέλανον) καὶ τὰς βοῦς συμβάντων. This last observation is illustrated by the Scholia ad Nubes, 981. (κηκείδου) cf. ad 980. τεττίγων: and by Porphyry, De Abstinentia, ii. 10. p. 119. Cf. the Etym. M. in Βουφόνια: Anecdota, 238. 21. Διϊπόλια: both which would imply that the Διπόλεια, or Διιπόλεια, of this date were the same with the Βουφόνια. Other Scholia however speak of the Διϊπόλια as the same with the Διάσια, and assign it the date of the 23rd of Anthesterion: Ἀνθεστηριῶνος η΄ λήγοντος: as the Scholia ad Nubes, 407: cf. ad 862. 980: and ad Thesmophor. 754: cf. Thucyd. i. 126. They must consequently be mistaken either in making the Διάσια the same with the Διπόλια, or Διπόλεια, or Διιπόλεια, or in assigning it the date of the 23rd of Anthesterion. The former is most probable.

g Etymolog. Magn. in voce.
h Anecdota Græca Par. iv. 199. 24. Cyrilli Lexicon.
i Suidas, in voce.
k Lysias, xxvi. 8.
l Cf. Diss. i. iv. iii. 107.
m De Mensibus, ii. Uranolog. 279 A–C: cf. vi. 288 C–E.

Pyanepsion, and Anthesterion; and as a consequence of that, the viith and the viiith also, Posideon and Gamelion, the numerical order of both which was thereby changed from the *sixth* and the *seventh* respectively, to the *seventh* and the *eighth* respectively.

With regard to the first two of these three months (the misapprehension of the place of which thus deranged the rest of the scheme), Mæmacterion and Pyanepsion, the mistake made by Gaza is not less excusable in him than in many others of the learned in more recent times, who have fallen into it also. And indeed the order of these two months in particular, relatively to the rest, and to each other, until lately, has been considered one of those doubtful and still unsettled questions, on which different opinions might be entertained. But with respect to Anthesterion, the scheme of Gaza is singular; and the mistake which he made respecting the place of that month seems to have been due to a misapprehension of the etymon of its name: which made him refer it to the natural season of the fall of the leaf, not to that of the budding of trees, and of the first opening of flowers and blossoms[n] *.

With regard to the order of these two months, Pyanepsion and Mæmacterion, which has been so much disputed, the testimony of the inscription, considered by us on a former occasion[o], is very important; especially if it was one of the original constitutions of Solon. Metageitnion, Boëdromion, and Pyanepsion, were recognised in it as the three months

* His judgment too respecting the site of Mæmacterion in the natural year appears to have been a good deal influenced, first, by the testimony of Aristotle, De Animalibus, vi. 11: Πλειστάκις δ' ἀποτίκτει ὁ καλούμενος τῶν γαλεῶν ἀστερίας· ἀποτίκτει γὰρ δὶς τοῦ μηνός· ἄρχονται δ' ὀχεύεσθαι μηνὸς Μαιμακτηριῶνος: and secondly, by what he seems to have heard said by the fishermen of his own time, of the habits of this fish: Ταῦτα δὲ συμβαίνειν εὐθὺς ἀπὸ ἰσημερίας φθινοπωρινῆς, οἱ περὶ Τάραντα ἁλιεῖς λέγουσιν: De Mensibus, v. 286 E. 287 A. Laying both these statements together, he inferred that Mæmacterion must have come next to the autumnal equinox. Which was mistaken (whether Aristotle, or these Tarentine fishermen) we do not undertake to say; though both may have been in the right, if the habits of the fish in question, for different localities, were capable of differing.

[n] Vide Diss. i. ch. iv. sect. iii. p. 96. [o] Diss. i. ch. ii. sect. 7. p. 42 note.

most closely connected with the greater mysteries: and Gamelion, Anthesterion, and Elaphebolion, as the three which stood in the same relation to the lesser: Metageitnion as the month which preceded, Pyanepsion as that which followed, the month of the greater mysteries; and that month being Boëdromion, this ought to be decisive that Pyanepsion followed on Boëdromion. Another testimony is extant also, equally important to this question, though not of equal antiquity; the date of an observation of the Greek astronomer Timocharis, recorded in the Magna Compositio, in terms both of the Attic Pyanepsion and of the Egyptian Thoth: which we shall have occasion to consider hereafter. Add to these two the etymons of the names of the months themselves; one implying that the month so called must have come next to the autumnal equinox, the other that the month so denominated must have been the month of storms and tempests, the first of the months of winter. And to all these arguments of the place of these two months in the order of the calendar respectively, add the positive testimony of the old grammarians, that Pyanepsion was the fourth month, Mæmacterion was the fifth, reckoned from Hecatombæon, as the first; and the long-debated question on this point may well be considered as decided at last, and settled, beyond the possibility of any further doubt or controversy.

An inscription is extant [p], in which all the months of the calendar, including the intercalary one itself, are enumerated under their proper names, and in their respective order, beginning with Boëdromion, as follows:—

i. Boëdromion.	ii. Pyanepsion.	iii. Mæmacterion.
iv. Posideon i.	v. Posideon ii.	vi. Gamelion.
vii. Anthesterion.	viii. Elaphebolion.	ix. Munychion.
x. Thargelion.	xi. Skirrhophorion.	xii. Hecatombæon.
	xiii. Metageitnion.	

There is another [q] in which *four* occur, beginning in like manner with Boëdromion, under their proper names and in their proper order.

i. Boëdromion.	ii. Pyanepsion.
iii. Mæmacterion.	iv. Posideon.

[p] Corpus Inscript. No. 270. cf. Marmora Oxoniensia, liv.

[q] Corpus Inscript. No. 276. i. 383–385: cf. Corsini Fasti Attici, Pars i. tom. ii. 182–187. Dissert. xi. 23.

There is a third[r], which exhibits the names and order of nine, beginning with Metageitnion.

i. Metageitnion.	ii. Boëdromion.	iii. Pyanepsion.
iv. Mæmacterion.	v. Posideon.	vi. Gamelion.
vii. Anthesterion.	viii. Elaphebolion.	ix. Munychion.

There is a *fourth*[t], in which eight are enumerated, beginning with Mæmacterion.

i. Mæmacterion.	ii. Posideon.	iii. Gamelion.
iv. Anthesterion.	v. Elaphebolion.	vi. Munychion.
vii. Thargelion.	viii. Skirrophorion.	

A fragment of the Attic calendar occurs also in the Anecdota of Mr. Bekker[v], in which the names and order of all the months, as far as it is entire, are correctly recited. *Μῆνες Ἀθηναίων οὗτοι· Ἑκατομβαιὼν, Μεταγειτνιὼν, Βοηδρομιὼν, Πυανεψιὼν, Μαιμακτηριὼν, Ποσειδεὼν, Γαμηλιὼν,* * * * *Σκειροφοριών.*

In all these instances the order of the two months, Pyanepsion and Mæmacterion, both *inter se* and relatively to the rest, is the same. In all Pyanepsion follows Boëdromion, and Mæmacterion follows Pyanepsion. We may therefore take our leave of this subject, after one more remark: viz. on the relation of the months of the calendar, from the time of Meton downwards, to the natural year.

SECTION III.—*On the division of the months, relatively to the seasons; or the Spring, the Summer, the Autumnal, and the Winter months of the Calendar respectively.*

According to the modern division of the natural or tropical year, which is determined by the ingress of the sun into the cardinal points of the ecliptic, and allows three months to each of the seasons; the relation of the Attic months to the natural year would require to be represented as follows.

Μῆνες ἠρινοί.	Μῆνες θερινοί.
i. Munychion.	i. Hecatombæon.
ii. Thargelion.	ii. Metageitnion.
iii. Skirrhophorion.	iii. Boëdromion.

Μῆνες μετοπωρινοί.	Μῆνες χειμερινοί.
i. Pyanepsion.	i. Gamelion.
ii. Mæmacterion.	ii. Anthesterion.
iii. Posideon.	iii. Elaphebolion.

[r] Corpus Inscript. No. 523: Marmora Oxon. xxi. [t] Ibid. 2309. [v] 281. 16.

But according to the ancient division of the year, which dated the spring with the Zephyri Flatus, the summer with the heliacal rising of the Pleiads, the opora with that of Sirius, the phthinoporon with that of Arcturus, and the winter with the cosmical setting of the Pleiads; the same relations would be more correctly exhibited as follows.

Natural divisions of the Attic months, according to the ancient rule.

Μῆνες ἠρινοί.	*Μῆνες θερινοί.*	*Μῆνες ὀπωρινοί.*
i. Anthesterion.	i. Thargelion.	i. Hecatombæon.
ii. Elaphebolion.	ii. Skirrhophorion.	ii. Metageitnion.
iii. Munychion.		

Μῆνες φθινοπωρινοί, or *μετοπωρινοί.*	*Μῆνες χειμερινοί.*
i. Boëdromion.	i. Mæmacterion.
ii. Pyanepsion.	ii. Posideon.
	iii. Gamelion.

A division, however, which must not be considered so determinate and exact, but that part of Anthesterion might sometimes belong to the winter, part of Munychion sometimes to the summer; and so on, in the rest of these instances.

END OF VOL. I.